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LOSS OF THE RIO JANEIRO.

BY ALEXANDER MCADEE, FORECAST OFFICIAL, SAN FRANCISCO, U. S. WEATHER BUREAU, IN THE MONTHLY WEATHER REVIEW.

On the morning of February 22, the Pacific Mail steamship Rio de Janeiro ran upon the Fort Point Reef during the fog. Within fifteen or twenty minutes from the time of striking the vessel sank, and of the 210 persons on board, 130 were lost. Another statement, purporting to be official, makes the total number aboard 207, and the lost 127.

The following facts are obtained chiefly from the statements of Pilot F. W. Jordan; the ship's master, Capt. Wm. Ward, went down with the vessel. The pilot boarded the Rio de Janeiro in the vicinity of the 9-fathom buoy, near the bar buoy, and anchored in 13 fathoms at a little before six o'clock Thursday night, February 21. The weather being foggy, the ship remained at anchor till about 4 a. m., one hundred and twentieth meridian time, when the fog lifted and the Cliff House Light could be seen, but not the Point Bonita Light. Preparations were in progress to steam into the harbor, when a dense fog came out from the Golden Gate, obscuring everything.

There is some difference of testimony as to whether the captain or the pilot gave the orders to proceed in the fog, but the vessel was started on a north-east course with Lime Point straight ahead, steering by the whistle. The pilot expected to get an echo of the ship's whistle from Point Diablo, but heard none. The course was changed north-northeast with the intention of running close to Lime Point. The vessel was not moving at full speed and was subject to a strong cross current, which, apparently acting at right angles to the length of the vessel, carried the ship to the south, far out of the proper course. The first officer was standing on the starboard side listening for the Fort Point bell. No soundings, however, were taken. The vessel struck a short distance to the southwest of the Fort Point Light. At the moment of striking the pilot saw the white flash at Fort Point and heard the Fort Point bell.

The pilot had had eleven years' experience in the harbor and was considered one of the most capable pilots in San Francisco. He had never previously met with an accident. There appears to be no doubt of the existence of the strong cross current, inasmuch as other vessels entering the harbor about the same time on the same morning came near going on the rocks. The Pacific Mail Steamship Co. has a rule that vessels must not enter or leave a harbor when fog prevails. On the morning in question the fog lifted for a few moments and then settled down again; but by 9 a. m., local time, the fog had dissipated. The rest of the day was clear and balmy, and the water as smooth as a mill pond.

The vessel struck about 5:30 a. m., with the pilot and captain on the bridge, the first officer on the starboard side of the bridge listening for the bell, and the second officer at the telegraph. When the vessel struck the captain blew the danger whistle, a long blast. Ordinary fog blasts (long enough to count six or seven) had been blown previously.

The details of the accident, particularly with reference to the whistles, the course steered, and the motion of the current are given, because from such evidence as can be obtained at this writing, it appears that even after the vessel struck the sound of the whistle was not heard plainly at Fort Point not more than half a mile distant, where a lookout of the life-saving station was on duty, and where a life-saving crew could have hurried to the rescue and probably reached the ship within five minutes, without doubt saving many of those whose lives were lost. There was also a sentry walking post within a short distance of the lookout. It is stated that some soldiers heard voices and also a whistle, but the evidence is very conflicting and it seems improbable that if

the long danger blast was clearly heard it should pass without notice and subsequent action.

The Weather Bureau records show that about the time of the accident a mongrel tule fog prevailed over the Bay of San Francisco. At Mount Tamalpais the weather was clear with a wind of 13 miles per hour from the north-west. At San Francisco dense fog prevailed with little if any wind. The wind vane at the Mills Building indicated a south-west wind blowing about one mile per hour. From 1 a. m. till 6 a. m. but 9 miles of wind were recorded.

When all is said and done, it appears that the fog was the prime factor in causing the loss of the vessel. Owing to the aberration of the sound waves in the fog, the pilot was unable to hear the fog signals from either Point Bonita or Lime Point to the north, or the tolling of the bell at Fort Point to the east and north. It has not, however, been shown that the bell was certainly ringing. The Lime Point whistle has great penetrative power. The fog bell at Fort Point is 40 feet above the water, and should be heard for at least a mile. It is supposed to be struck every ten seconds. It is a strange fact that in a paper upon the Fogs and Fog Signals of the Pacific Coast, by Ferdinand Lee Clark, published in 1888, there should occur this statement concerning the fog bell at Fort Point:

"In point of fact it is said to be hardly ever heard except when too late to be of use. * * * If mariners depended upon its sound to tell them how near they were to the point they would generally have no time after hearing it to clear the danger."

The loss of the Rio de Janeiro proves that the bell at Fort Point in its present position is sometimes of little value.

The temperature at the time of the accident was 50° F. at sea level, and 52° at a height of 2,500 feet. The thickness of the fog probably did not exceed a few hundred feet; and as indicated above it was a land fog rather than a sea fog.

As a general thing the reflected sounds from Point Bonita and Lime Point are heard better on the south side of the channel. On the accompanying rough sketch of the channel the lines of natural reflection are drawn and also the zones of inaudibility.

The sound waves from the fog whistle at Lime Point, however, should have been heard, and as the moderate south-west wind would tend to cause a deflection of the sound wave upward, it is possible that while the sound was inaudible on the deck of the vessel, it might have been heard by a lookout at the masthead.

The catastrophe furnishes a remarkable illustration of the utter helplessness of a vessel in fog despite lights and fog whistles. It would seem that under such conditions nothing short of some method of fog dissipation will suffice.

It has occurred to the writer, although the suggestion may prove of no value in practice, that if a strong sound had been made under water by some automatic contrivance at either Lime Point or Point Diablo, and the Rio de Janeiro been provided with some suitable device rendering audible the sound wave through the water, the strong cross current would have facilitated the passage of the sound, and a zone of audibility would have been established in the water while in the atmosphere above the fog signals, would have been inaudible.

The accompanying line drawing is submitted to show that to a certain degree the captain and the pilot were justified in assuming that they might soon run into areas free from fog. As a matter of fact on the day in question the fog soon disappeared, and a delay of perhaps two hours would have prevented the accident. It should not be forgotten, however, that the captain was unwilling to enter the harbor during the fog Thursday night, and that the vessel remained at anchor for a period of nearly twelve hours, and was thereby exposed in a large degree to the danger of collision.

DOMINION GEOLOGICAL SURVEYS.

In the province of Ontario Dr. A. E. Barlow will make lithological investigations in the Sudbury district, chiefly with regard to nickel. Prof. John Macoun will collect botanical specimens along the north shore of Lake Erie, and the east shore of Lake Huron to Cape Hurd. He will also explore Temagami Lake Park.

Dr. Ellis, with two assistants, will finish the Kingston district.

Mr. Robert Chalmers will go to the St. Lawrence Valley and westward to Lake Huron, to investigate wells and borings for water, gas and petroleum.

It is also intended to explore the region between Lake Nepigon and Lake St. Joe, the north shore of Lake Superior, north of Jackfish Bay, and the Muskoka district. Mr. W. J. Wilson will go to the Valley of Abitibi river, and Mr. Frank Johnston will go round Lake Abitibi and northward and eastward in conjunction with Mr. Wilson.

Dr. Ami will be in the Valley of the St. Lawrence, west of Lake St. Francis, and the Ottawa Valley, west of Mattawa.

Mr. D. B. Dowling and Mr. James Macoun will visit the District of Keewatin, in the region southwest of Cape Henrietta Maria, and will make a track survey of the Opazatika river.

Mr. A. P. Low will visit the east coast of Hudson Bay and the outside chain of islands in the southern part of the bay.

CONSOLIDATION OF SHIPYARDS.

A consolidation of the Union Iron Works, San Francisco; the Bath Iron Works, Bath, Me.; the Newport News Ship Building & Dry Dock Co., Newport News, Va., and the Crescent Shipyards, Elizabeth, N. J., is reported.

This combination will bring together Lewis Nixon, of the Crescent shipyards; Edward W. Hyde, president of the Bath Iron Works; Calvin B. Orcutt, president of the Newport News Ship Building and Dry Dock Co., and Irving M. Scott, president of the Union Iron Works.

To Lewis Nixon, who owns the Crescent shipyards at Elizabeth, N. J., belongs the credit of bringing about the combination which is now being matured. He has given the subject careful and scientific study and he is of the firm opinion that the American shipbuilding industry will be returned to the prosperity it knew fifty years ago, when the several yards attempted only that work for which they individually are best fitted.

Foreign competition is responsible for the new move of American shipbuilders, and, in fact, English methods of business are being followed. There is to be no shipbuilding trust. Community of interest of the four concerns is what is to be established.

A LARGE ICE CRUSHER.

The Ann Arbor Company contemplates building an ice crusher which will be the most powerful boat of the kind on the lakes, and which will be built especially for breaking the heavy ice in Green Bay. This boat may not be built for several years, as it all depends on the government and what is done in the way of deepening and improving Sturgeon Bay canal.

Agent Allison, in speaking of the matter, said: "The contract for this big ice crusher was awarded last fall to the Detroit Ship Building Company, but upon the defeat of the river and harbor bill the company cancelled the contract. I have assurances it will be renewed when the canal is deepened. This monster ice crusher will be built of steel, having triple expansion engines, and will be capable of breaking any ice in Green Bay. She will draw 15 feet of water, and will be built on the lines of the Russian ice crusher which has been so successful in breaking ice."



CLEVELAND.

Special Correspondence to The Marine Record.

The daily Toledo and Put-in-Bay route will be opened toward the end of this week.

The river custom house is now open for night service, with Capt. E. L. Pardee in charge.

The Wilson Transit Co. is paying last season's scale of wages to their engineers, so is Mitchell & Co.

Coal freights remain at 40 cents, Lakes Michigan or Superior, the same figure on anthracite is quoted from Buffalo.

Shoal water has been found at the entrance to Fairport and Ashtabula, and dredging will be started there at once.

The harbor master has sent several vessels to an anchor in the outer harbor on account of the crowded condition of the river.

Many of the very poor have lost a good friend this week in the death of Mrs. Jones, the wife of the chaplain of the Floating Bethel.

Capt. Emil Detlefs has resigned from the steamer Saxon to take charge of the John W. Moore, for several seasons sailed by Capt. Richard Neville.

Geo. Uhler, national president of the M. E. B. A. paid a short visit here on Wednesday, and left again for Buffalo after talking to the shore engineers of several fleets.

It is now likely that the Tashmoo-City of Erie race will be run from Buffalo to this port instead of as first arranged, v. z. from here to Buffalo. The change is denied though.

The passenger steamer Puritan, built by the Craig Ship Building Co., Toledo, to the order of Graham & Morton, Benton Harbor, was successfully launched on Wednesday.

Evidently the city requires to do a little dredging, as the Castalia grounded about the viaduct, and took several hours to drag through the mud from the Seneca to Main street bridge.

There was no difficulty at any time between vesselowners and lake engineers regarding rate of wages, and now that the other terms are called off, engineers are getting to work as fast as possible.

E. D. Rogers has resigned as assistant sales agent in the Cleveland offices of the Republic Iron & Steel Co., to become sales manager for the Bassett-Presley Co. of Cleveland, in which he acquired an interest.

Capt. Peter Lynch has succeeded in being appointed harbor master, and he will make a good, fair, all-round man, too. Capt. Murch was also a candidate and quite a few influential men are rather annoyed that he was not given the position.

There has been a rumor this week to the effect that the Steel Corporation Co., would absorb the United Towing Co. Possibly this report would get around through a deal concluding the season's towing arrangements for the big fleet.

Mr. John A. McGean formerly with Messrs. Upson, Walton & Co., shipchandlers, and later, assistant manager of the Bessemer Steamship Co., has received the appointment as purchasing agent for the Steel Corporation in their vessel department.

W. H. Stone, for many years chief engineer for the Hawgood Transportation Co., will handle the engine of the steamer Meteor on her trip from Toledo, O., to San Francisco, Cal. The Meteor is booked to leave Toledo on Thursday. Mr. Stone will be accompanied by his wife and son William.

With Mr. Joseph Hayes as shore engineer, and Messrs. Smith and Fraser as his assistants, the steam fleet of the Steel Corporation will be well and skillfully handled. The old time extravagances will no longer be allowed to prevail, while mechanical ability will, no doubt, be duly recognized.

It appears that the Steel Corporation will pay wages and the highest going if they think fit but won't be dictated to relative to the number of engineers they will carry, furthermore, the non-union men now at work will remain in the employ as long as they can do their work properly. It is safe to say that no one will remain longer.

Capt. James H. Stover, who for a number of years sailed steamers of the Moore-Bartow fleet, and who was well and favorably known all along the lakes, died suddenly from a stroke of paralysis last night. Capt. Stover was in the

steamer N. K. Fairbank for a number of years. The last boat he sailed was the steamer Colonial. He has been ashore for several seasons.

A couple of hundred engineers are holding off making an agreement to work for the United States Steel Corporation until all of their demands are complied with. The Steel Corporation early offered to comply with the engineers' views, but hold to the belief that they know how to man their boats better than the workmen do. A few other firms also entertain the same ideas, including the Minnesota, Mitchell and Bradley fleet.

Captain George P. McKay, ship's-husband of the Hanna fleet, has about severed his connection with active lake business after a service in it of a great many years. A little more than a week ago the United States Steamship Co. absorbed the Mutual and the Menominee fleets, which he served, and since that time he has been clearing up his affairs and getting ready to retire. He is still the treasurer of the Lake Carriers' Association and secretary of the executive committee, to which work he will devote a great measure of his time.

The Standard Contracting Co., Wade Building, has secured the contract to construct a canal through Port Huron, at a cost of \$93,400. The firm has a contract to widen the river here, work on which was stopped this week near the Superior street viaduct, on account of quicksand being met with near the foundation of the pillars supporting the west end of the bridge. The Standard Co. has done some good work on large contracts, and, although the Port Huron business was closely contested for, they ultimately landed the long talked of improvement.

They will have to hurry up on the repairs to the revenue cutter Morrill, or she won't be ready to police the "Soo" river when the early portion of the fleet starts, and they will perhaps be able to save an hour or two in piloting up and down the river. It was rather early in the season for the government patrol boat to be rendered hors-de-combat. She ought to have left that part of the experience to some carelessly conducted iron ore drogues. Just for a change, it would be a good thing to fine her the cost of repairs with no remission of the total. Capt. Davis, U. S. R. M. S. will, no doubt, realize the difference between chasing pirates and bucking lake ice in the spring.

The departure of Geo. Uhler, national president of the M. E. B. A. for Philadelphia, was not on account of the association men not sticking to him, or that he became in any way tired of the turmoil or disgusted at the lack of recognition of himself or the union. I was told a day or two ago that Mr. Uhler was always moderate, conservative and consistent in his counsel to the working members, and that the attitude of his personality was somewhat forced upon him to screen those who made the balls for him to fire, in any case the skirmish is now over, and it is to be hoped that all of the more radical advisers, etc., are fully satisfied with the passing display of temporary power or obstinacy.

CHICAGO.

Special Correspondence to The Marine Record.

The last charter here was at 2½ cents wheat to Buffalo.

Samuel Massey, of Ogdensburg, has received master's papers from the board of local inspectors of steam vessels.

Whether it was from the fault of the engineers or not, the steamers E. W. Oglebay and the Hendrick Holden had both to return to port with disabled machinery.

The schooners Lotus and J. B. Newland collided in a fog off Big Point Sable on Tuesday night and each captain blames the other. Damages moderate and no loss of life.

The new tug for the Chicago Lumber Co., built at the Burger & Burger shipyard, Manitowoc, was launched on Saturday. She will be used at Manistique and cost \$14,000.

P. A. McCarthy, organizer of the marine firemen, oilers and water tenders of the Great Lakes, is about to make a tour of all the ports along the lakes to enroll all men that follow that craft for a livelihood.

The steel steam yacht Cangarda, built by the Pusey & Jones Co. for Chas. J. Canfield, of Manistee, Mich., was launched Saturday. The yacht, which is to be schooner rigged, will be completed and ready for delivery to her owner in June.

Mr. W. L. Brown, president of the American Ship Building Co., has returned, after an extended trip to England, France and Italy. "General conditions of business abroad are highly favorable," he said, "and the prospects for a demand for our products are equally so. The world will want our iron and steel the coming year."

For tonnage to arrive 2 cents is offered on wheat. On iron ore Escanaba to South Chicago 23 to 25 cents free of discharging charges. The Tuesday reports from St. Clair river shows that the three weeks' blockade is likely to last until the end of this week at least.

The large steel steamer W. L. Brown, owned by Elphicke & Co., has been chartered for the season by the Canada-Atlantic Transit Co. She will carry about 250,000 bushels of wheat. It is reported that the charterers are looking for a package freight (general cargo) carrier.

Judge Neely, sitting in the Circuit Court, refused to issue a writ of mandamus to compel the West Chicago Street Railway Co. to lower its tunnels under the Chicago river at Van Buren street. The writ was asked by the city, alleging that the tunnel impedes navigation. The case will be appealed.

The steamers of the Lake Michigan and Lake Superior Transportation Co. are officered as follows: Peerless—Captain, H. C. Page; engineer, J. R. Bennett. City of Traverse—Captain, N. McCormick; engineer, E. Meeh. Jay Gould—Captain, Charles Wilson; engineer, H. Chalk. Osceola—Captain, Joseph White; engineer, James Oag.

James Mowatt, the veteran drydock man, has been appointed agent for the Shipowners' Drydock, formerly known as Miller Bros.' Drydock. Mr. Mowatt will have charge of the outside work of the company. He held the same position with the Chicago Ship Building Co. prior to its amalgamation with the trust. Plans for extensive improvements in the plant are now being perfected.

A. M. Nichols, traffic manager of the Chicago & Muskegon Transportation Co., the Barry line, says the company is negotiating for an Atlantic coast steamer, with a speed of 16 miles per hour for the Muskegon-Chicago run, to operate in conjunction with the steamer Alice Stafford. He also says the Stafford is exceeding expectations in speed. She was built for a 14-mile boat, but Mr. Nichols believes she is making better time, and that without crowding.

The Northwestern is likely to be overhauled by the Northman and both get down to Montreal about the same time. The ice jam in the St. Clair river was not counted on here as being likely to last so long. However, this delay will give the boats a good chance to get out of the Gulf of St. Lawrence clear of ice. May 3 is the date of first sailing of the Elder Dempster line of Atlantic steamers from Montreal and the Chicago liners will follow her closely if all goes well.

The ice blockade in the St. Clair river has upset all calculations here for the past several days and shippers let up on the pressure to get boats to start out with their grain cargoes on learning of the ice jam. On the other hand, the engineers' strike and then the stoppage of all river navigation by the ice just played into the hands of vessel owners as distinct from the line boats. By the way, Buffalo used to squirm about paying high wages and now figures that it will cost about \$500 more in the engine department this season than before. The deck officers will look for a raise, too.

The steamer Northman, the second of the Northwestern Transportation Co.'s ships to sail for Europe, cleared on Tuesday for Hamburg. Should she suffer no delay from the ice blockade at Port Huron when she reaches there, the voyage to the German city should take about twenty-two days. Before reaching salt water she will probably overtake and pass her sister ship, the Northwestern, which sailed a week ago for Liverpool. The latter was stopped by the ice blockade in the St. Clair river. The Northman loaded direct for Hamburg, and will only have to stop on the way to get fuel. The cargo of the Northman consists of 100 tubs of butter, 1,367 bales of hay, 3,554 pieces walnut lumber, 14 sacks graphite, and 7,314 packages of harvesting machinery.

The Canada-Atlantic line steamer Ottawa, bound from Chicago to Depot Harbor with corn, ran ashore at Big Point Sauble, five miles north of Ludington, on Monday morning. The weather was foggy and the captain claims he could not see the Ludington light nor hear the fog whistle. It is thought that the compasses were out of order. She left Chicago Sunday morning and steered the South Chicago course, which should have taken her 15 miles outside the point. She was released by the passenger steamer Illinois after 600 bushels of corn had been lightered into the schooner Scoville. The Ottawa was neared twenty inches but it is not thought damages are heavy. The wrecking bill will be about \$800, according to present advices. The vessel was not stranded for over 24 hours as immediate assistance was sent to her. It ought to be found out how she became lost in the fog on such a short run, especially as she again fetched up on Bois Blanc Island and went through the same experience of lightering, etc.

DETROIT.

Special Correspondence to The Marine Record.

Capt. Eber Ward relates that in the summer of 1837 the ice jam lasted in the rivers until the close of May.

The ice jam is playing havoc with the fleet of vessels held in its grasp, and hull damage has already occurred in several instances.

The steamer John Haggart, of Perth, Ont., has been sold to parties at Sault Ste. Marie, and will be used as a ferry-boat between the "Soos."

The new steel steamer David M. Whitney had her trial trip on Saturday, and she reeled off twelve miles an hour against the current in the river here.

The northern division of the D & C. Line will be opened by the steamer City of Detroit, Capt. McKay, at the earliest possible chance. There is a large quantity of cargo to go forward.

The wrecking tug Favorite is in dry dock undergoing a thorough overhauling, recalking, etc., for her season's work. It is expected that she will leave here about Thursday to go on her station in the Straits of Mackinac.

Members of the Engineers' Association at Port Huron have induced two firemen and an oiler on the steamer Fedora and three firemen from the Frost, now lying there, to quit their positions in sympathy with the cause of the union engineers.

The Port Huron canal from Huronia Beach through to Black River has now been contracted for and undertaken by a Cleveland firm known as the Standard Contracting Co. for \$93,400. The city has been bonded in the sum of \$100,000 to meet the expenditure.

The steel cargo steamer Lake Shore, built for J. C. Gilchrist and others, Cleveland, was launched on Wednesday from the Bay City yards of the American Ship Building Co. Her sister ship will be launched in a few days and both will receive their machinery and equipment at this port.

Capt. James Davidson says that he is not hurrying the work of fitting out. He cared very little about moving boats with the present freight rates. Capt. Davidson says he has not been affected by the engineers' strike and would not mind in the least if navigation did not open for a month yet.

The ice jam is being started and a large portion of the fleet passed down, including the Pentland, the first boat through the Straits of Mackinac, where she might as well have remained for a couple of weeks and saved fuel at least, but scores of others whose expenses will eat up the first freight earnings were in it as well as her.

This has been a week of anxiety regarding the ice jam, and the fleet of vessels held in the rivers. It is hoped that no damage will be done to the craft and that the enforced detention will be the only loss. It was a streak of carelessness to start boats out before the river was clear of ice and the owner's pockets will feel it for a trip or so, though the wages don't count for much in a large steamer's earnings after all, still fuel bills, etc., run up rather regularly.

The lake engineers are now making terms as best they can with the owners, though quite a number don't like the idea of their national president not having been recognized by the owners of steamers. In point of fact it was not Geo. Uhler personally that was to be recognized but the union. The engineers score a point in making their wages about 15 per cent more than they first demanded and this will easily amount to an extra month's pay for the season.

The wooden steamer City of Berlin, Capt. John Buie, led the ice fleet, fueled here on Monday and proceeded on to Buffalo with 100,000 bushels of wheat, Capt. Buie has bucked ice for several seasons past and this time he left the bunch still ice-bound. The City of Berlin was built at the Davidson yards West Bay City, in 1891 and is owned by Henry Wineman, Jr., of Detroit. She measures 2,051 gross tons and is 298 feet long with a 41 foot beam. She is rated A1.

The tug John Johnson was fined \$500 at Toledo this week for carrying people other than the crew. The collector of customs also assessed Wm. Rooney one of her owners \$500 for interfering with an officer while in the execution of his duty. This is the new law that was passed in the last session of Congress. On application to the Supervising Inspector of Steamers for the district, which in this case is Capt. Jas. Stone, Cleveland, tugs and other craft may be allowed to carry other persons than the crew. This is the twisted and mixed kind of a rule that the RECORD criticized at the time it was introduced by Senator McMillan and supposed it had got through because no one knew what it was meant for anyway.

DULUTH-SUPERIOR.

Special Correspondence to The Marine Record.

The Tyrone loaded the first cargo at the Superior elevators this spring. She loaded 130,000 bushels of wheat.

The 80 cent ore rate equals 2 cents on corn and this figure is offered up to May 10. 2½ cents is asked.

Capt. D. D. Gaillard, Corps of Engineers, U. S. A., now in charge of this river and harbor district, has returned from Washington.

Reports of large sales of lumber come in almost daily. New York, Chicago and Tonawanda purchasers are in evidence this week.

The saw mills of Chequamegon Bay, both at Washburn and Ashland, are steamed up, getting in readiness to open their season's work.

A telephone at the life saving station is still being worked for and no doubt one will be installed by the time the season is fairly well opened.

Numbers of the whaleback fleet have been towed to Two Harbors this week to store ore in previous to starting down the lake the pockets were getting crowded.

More efforts to charter lumber vessels at \$2.25 per M feet to Lake Erie ports and a steady holding out for \$2.50. A shipper owning vessels made the lesser rate.

Freight on anthracite coal from Buffalo here is 40 cents, a reduction of 10 cents per ton from what owners and brokers considered a fairly living freight rate.

There is some talk of erecting large coal storage docks at Portage Lake, about 500,000 tons is used there yearly and in the event of strikes, etc., coal would run short at the mines.

Engineers strike or not, the Northern Line boats are expected to arrive here just when Mr. J. J. Hill gives the word even if he has to tap the Atlantic and Pacific coasts for men to work for him.

Capt. W. H. Singer, owner of the White Line Transportation Co. is going to give us lots of facilities for lake travel this season. The Bon Voyage purchased from the Howard Transportation Co. is now in the White Line fleet.

The Brooks-Scanlon Lumber Co. will build an immense new lumber mill at Cloquet, Minn. The contract for construction has been placed in the hands of W. A. Wilkinson, St. Paul. This will make the above firm the largest manufacturers of white pine in the country, if not in the world.

On account of the more equitable tax on floating property now in force in Wisconsin, Capt. Barker will not register his fleet at Duluth, but will retain his Superior enrollment. This is as it should be and will give each side of the bay an equal showing in so far as the hauling port for vessels is concerned.

There has been some talk here of the lake engineers joining the American Federation of Labor, and thus affiliating with the other local trades. From what is learned here each firm is making its own dicker with the engineers required for their boats and there will be no smash-up of the Lake Carriers' Association after all, or at least not this season.

The steamer G. A. Flagg, built for a syndicate headed by D. R. Hanna, of Cleveland, was launched at West Superior, on Tuesday. The Flagg measures 336 feet over all, 42 feet beam, and 26½ feet deep. Her sister ship, the Randolph S. Warren, will be launched Saturday. The boats will be used in the copper trade between Keweenaw Peninsula and Lake Erie.

All of the harbor tugs are ready for service as soon as there is work for them. A mint of money in the form of wages has been lost to earners this spring through the late engineers' strike, but whether the capitalists and vessel-owners have saved it or not is perhaps not quite so clear, anyway it has not reached its regular channels.

The report comes from Chicago that the Diamond Match Company directors, who met there Saturday to consider the purchase of the interests of the Merrill & Ring Lumber Company in this lumber district, which includes the mill in Duluth, the Split Rock Lumber Company with its logging railroad and the large timber interests of the former company, turned down the proposition and that the deal is off.

The passenger boats of the Singer Line between Duluth and the copper district will take in Isle Royale, Port Arthur and Fort William on their schedule this season, making semi-weekly runs across to the north shore from Houghton. The steamer Bon Ami will also be given a weekly trip to Marquette from Houghton. It is thought the establishing of a regular service will build up a tourist traffic to Isle Royale.

The first boat to arrive at Duluth through the Sault canal was the tug Maxwell, from Pentwater, Mich. She was bought by Whitney Bros., of West Superior, last winter, and

was brought up by Capt. Coburn. The captain says that he had no difficulty in getting through the St. Mary's river. The Carrington and Mabel Bradshaw opened coastwise navigation April 16 for north shore ports and Isle Royale, after being closed since February 9, on the arrival of the steamer Bon Ami from north shore ports.

BUFFALO.

Special Correspondence to The Marine Record.

Owing to the strike of boiler makers here the Lackawanna was towed to Erie, Pa., to have some repairs made.

The City of Glasgow, from Cleveland, entered at the Custom House and immediately cleared for Duluth. She was loaded with coal, and the reason for her coming to this port was not ascertained.

There has not been much coal chartering here this week considering that navigation is now open and that we are heading into the May month. All April orders were filled by rail, and shippers will load from their stock piles, but they seem no ways eager for tonnage just at present.

Capt. A. B. Wolvin, of Duluth, has not given up hope of getting the contract for constructing elevators. He has telegraphed the Montreal harbor commissioners asking that final decision on the question be postponed until May 10 that he might have an opportunity to confer with the board.

State Superintendent of Public Works Partridge has ordered that the Erie, Champlain, Oswego and Cayuga and Seneca canals be opened for Navigation at 12 o'clock noon on Saturday, May 4, 1901. In the order he says: "Anouncement of the opening of the Black river canal will be made at a later date."

As explained by a member of the Lake Carriers' Association, the lines are at liberty to hire their men as they see fit, and will do so at their own convenience. The wages demanded by the M. E. B. A. are as follows: On first class steamers: chief engineer, \$150 a month; first assistant, \$100; second assistant, \$75. Second class steamers: Chief engineer, \$125 a month; assistant, \$90. Third class steamers: Chief engineers, \$105 a month, assistant \$75.

Features of the contract signed by the engineers are an advance of chief's pay to \$150 a month, and assistants to \$100. Second engineers are to receive \$125 and their assistants \$90. A clause of the agreement provides that the engineer shall not be a party to any sympathetic strike during the continuance of the contract. Local lines number 57 boats, as follows: Western Transit Co., 13; Anchor Line, 16; Lehigh, 6; Union Transit, 5; Soo Line, 5; Northern Steamship, 6; Drake & Maytham, 6.

FLOTSAM, JETSAM AND LAGAN.

The Marriage Question.—"Jennie, ma lass, it's a verra solemn thing to be married." "I ken that weel, fayther; but it's a great deal solemn no to be."

When the fish hear that Mr. Cleveland is going to spend the coming summer inland, there will probably be a day of piscatorial thanksgiving ordered.—Pittsburg Times.

"Your medicine has helped me wonderfully," she wrote to the patent medicine house. "Three weeks ago I could not spank the baby, and now I am able to thrash my husband. God bless you."—The Smart Set.

Letter and Answer.—"Dear Mr. Editor,—Please read the enclosed poem and return it to me with your candid criticism—as I have other irons in the fire." "Dear Sir,—Poem returned herewith. Remove the irons and insert the poem."

"Now that you have found the north pole," queries the faithful comrade, "what will you do with it?" "Do with it?" echoed the distinguished explorer, his face aflame with the joy of discovery, "I shall syndicate it."—Chicago Tribune.

Mrs. O'Hoolihan—"An' how's all th' folks after bein?" Mrs. McGonical—"It's all well they do be, exceptin' me owld man. He's been enjoyin' poor health for some toime, but this mornin' he complained av feelin' better."—Chicago News.

It is figured that by keeping the steamer Darius Cole tied up during the pending litigation this summer the boat will lose an even \$15,000 which she might be earning, in addition there is deterioration to the property. Friends of the Cole estate, in Detroit, and the H. W. Williams Transportation Co., of Chicago, have attempted to arrange an amicable agreement between the litigants by which the boat might be chartered for Buffalo business during the Pan-American exposition, but the Williams company has absolutely refused to be a party to any such arrangement.

THE LAW OF MAGNETISM.

A SHORT AND CONCISE LESSON ON MAGNETISM AS IT AFFECTS THE MARINER'S COMPASS.

BY CLARENCE E. LONG, MILWAUKEE.

(Arranged for Masters and Pilots on the Great Lakes.)

CHAPTER IV.

THE DIFFERENCE BETWEEN HARD STEEL AND SOFT IRON.

A horizontal bar of soft iron at the magnetic poles has no magnetism whatever, since there it is at right angles to the line of force. It is, in fact, in the same harmless position that the vertical bar found itself on the magnetic equator. When taken, however, into low latitudes, it gradually becomes magnetic if kept pointing toward the magnetic pole, and has its greatest power in the vicinity of the equator. The red magnetism will always be found in the end which points to the north, no matter which way you may turn it.

As the south magnetic pole is approached, a horizontal bar of soft iron loses force, and at the point of 90 degrees dip, has again ceased to be magnetic. In brief, vertical iron is most magnetic at the poles and horizontal iron held in the direction of the magnetic meridian, is most magnetic on the equator.

Another very marked distinction between vertical and horizontal iron must here be noted. The magnetic intensity of the latter depends not only upon its proximity to the equator, but on the angle it makes with the magnetic meridian. Thus, when held in a north and south direction (correct magnetic) it is at its best; on being turned in azimuth it loses power, and when held exactly east and west (correct magnetic) has none at all. Therefore, unlike vertical iron, horizontal iron on board ship has a varying action upon the compass, depending on the direction of the ship's head as well as on the position of its poles in their relation to the compass needle.

This is an important distinction; but there is yet another. Horizontal iron produces the same deviation in all latitudes, for though its power varies with that of the earth, the ratio between the two is constant; and since the first is a disturbing force of the needle, and the other the directing force, it follows that the deviation arising from the induced magnetism of horizontal iron is the same at any part of the globe.

A magnet possesses the peculiar power of producing magnetism in a bar of iron or steel without loss to itself, and so is capable of propagating its own species to any extent. Therefore, when trying with a crowbar or kitchen poker, it must not be placed too close to the compass needle, as the latter, if strong, will of itself induce magnetism in the poker when, from the position in which it may be held at the time, none would otherwise exist. Thus if a common spike nail be held near one pole of a powerful magnet, the latter will first induce magnetism in the nail of a contrary name to itself, and then the law which says that opposite poles attract each other will come into operation, and the nail in obedience will fly to the magnet. The process of making a permanent magnet, which is variously done by "touching" a bar of glass hard steel with the natural loadstone, with another magnet or by electricity, the one under treatment should be surcharged with the magnetic fluid. It never, however, retains all its original strength; but, after a while, settles down into a certain definite state known as "the saturation point," which, if the steel be of the proper temper, it will maintain for years without appreciable loss, and accordingly gets named a permanent magnet.

A steel ship may be correctly looked upon as in itself a large permanent magnet. She became so in the process of construction; for, although the materials of which she is built are not such as by themselves retain magnetism permanently, it is found that, when united in the form of a ship and subjected to percussion by riveting, etc., they acquire this property in a greater or less degree.

After launching and reversal of the ship's head as it was on the building slip, the magnetism undergoes very rapid diminution; but in no case does it depart entirely, and that which is left when the saturation point is reached is accordingly styled sub-permanent. So far there is a great correspondence between the ship, taken as a whole, and the steel magnet. It is evident that the position of the poles of the ship's sub-permanent magnetism must depend first, upon the direction of her head when building; and secondly, upon the "dip" at the part of the world in which she was built. The ship's magnetism, properly speaking, consists of two recognized quantities—sub-permanent and induced magnetism.

(CONTINUED IN NEXT ISSUE.)

ANCIENT AND MODERN METHODS OF ROPE MAKING.

The early methods of rope making, with brief reference to modern improvements, constitute a handsomely finished book issued by the Waterbury Rope Co., of New York, from which the following description, of general interest, is taken:

The word cordage is used in a comprehensive sense, to include all sizes and varieties of the article, from a hawser twine to the largest cable, though, strictly speaking, the term is hardly applicable to a rope that is less than half an inch in diameter.

It is probable that rope-making was among the very earliest of human industries, since the necessity for articles of the kind must have been felt by the rudest savages long before the development of the race converted nomadic tribes into semi-civilized communities. The materials first used for the purpose were probably the fibers of various grapes, the inner bark of trees, and the hides of animals cut into thongs and twisted together. Even now there may be seen in the Tyrolean Alps ropes made of twisted or braided thongs used in preference to any others, and which have descended from father to son for a hundred years.

Precisely when or with whom the invention of rope-making originated it is impossible to say, but the art was certainly practiced among the Egyptians more than four thousand years ago, as is evident from the sculptured representations of the process found upon the walls of ancient structures and places of sepulture. They made use of flax and the fibers of the date tree, as well as of rawhide, employed the latter for the formation of ropes possessing sufficient strength to raise the huge blocks of stone which constitute the pyramids, and to place in position the colossal statues which remain to this day as monuments of rude but effective workmanship.

The rope-makers of ancient Egypt seem to have been destitute of machinery. One man engaged a hook at the end of his twister and then walked backward away from another, who paid out the fiber of hemp, flax, papyrus, palm fiber, spartum, or whatever the material might have been. The weight enabled him to swing the twister, which was mounted on the stem he held in his hand.

In a tomb at Thebes, of the time of Thotmes III., the Pharaoh of the Exodus, is a group representing the process of twisting thongs of leather, which were fastened to the end of a tube, which revolved on a cord slung around the loins of a man who receded backwardly from the person who arranged and paid out the strands. The tube had, in all probability, a collar or sleeve which was grasped by the man, and had a bar and weight which was caused to rotate as it was swung around by the operator.

The strand of rope passed between the legs of the stool and between the feet of the man who arranged the strands and kept them from becoming tangled.

The character of the material is indicated in the manner which is peculiarly Egyptian, by the skin hanging up in the shop, and a man is shown cutting a continuous thong with a knife like our modern leather knife, and by the same means which we adopt, by turning the pieces of leather round as he cuts. Two coils are represented hanging up in the shop.

Rope-making was also well understood by other Oriental nations, if we may credit the historian Herodotus, who states that the Persians manufactured cables of twenty-eight inches in circumference of flax and papyrus with which to aid in constructing the bridge of boats upon which the army of Xerxes crossed the Hellespont.

Other writers also mention ropes made of goat's hair—the Tartars using both camel and horse hair.

Among the ancient Peruvians the fibers of the maguey plant were used for rope-making, and from this material they twisted cables of sufficient strength to sustain the primitive suspension bridges which spanned ravines and rivers. Similar structures are still in common use in many tropical countries. Even the rude savages inhabiting the islands of the Pacific and Indian oceans have from time immemorial produced cordage of wonderfully excellent workmanship, considering the fact that mechanical contrivances were almost entirely wanting, or only of the simplest and rudest description.

The application of machinery to rope-making dates within the past century. Prior to the year 1820, hand labor, aided only by the clumsy wheels and other imperfect me-

chanical contrivances pertaining to the old-fashioned rope-walk, was exclusively employed. In the year mentioned some machines were constructed in England for the purpose of twisting hand-spun yarns into strands, and a few of them were imported into this country. That was considered a great improvement, and as far as it went it was unquestionably a step in the right direction; but the question of introducing a radical change in the process of rope-making by the use of machinery for spinning the threads from the raw material is due to the skill of American inventors. The first machinery for this purpose was constructed in Massachusetts in 1834, and since that date numerous other valuable improvements have originated in this country. American rope-making machinery is now extensively employed in Europe, and American cordage is held in such high estimation that it is exported to all quarters of the world.

Some varieties of small cordage are still manufactured by hand labor; but the substitution of machinery is becoming so general that ere many years an old-fashioned rope-walk will be a curiosity rarely encountered. The rope-walk was usually from 1,000 to 1,400 feet in length, and the appropriateness of its name arises from the fact that the workman was obliged to walk constantly from one end to the other. The old process of rope-making was essentially as follows: The fibers of the hemp were hacked or straightened out by drawing through a steel-toothed comb. The workman then wound a bundle of hemp about his body, attaching one end to one of a series of hooks on a "whirl" or looper, drawing out the fibers from the bundle with one hand and compressing them with the other, experience teaching the number of fibers to draw out and how to twist them so as to hold firmly on to the hook. He then walked slowly backward down the walk, making his yarn as he went, the spinning being done by the wheel or "whirl" turned by an assistant, the spinner seeing that the fibers were equally supplied, and joining the twisted parts at the ends. Two or more spinners might be going down the walk at the same time, and at the end two would join their yarns together, each then beginning a new yarn, and returning on the walk to the end where the second spinner again took his yarn off the "whirl" and joined it to the end of the first spinner's yarn, so that it continued on the reel.

When a sufficient number of yarns were spun they were twisted into strands, and the strands into ropes, horse-power being usually employed.

The contrast is striking between this primitive process and the methods now employed in the immense factories of the present day, equipped with steam-driven machinery of the most improved construction.

At the present day the materials employed for rope-making are various, embracing hemp, flax, cotton, manila, sisal, jute, and other vegetable fibers. Russian hemp for tarred rigging has long maintained a reputation for superiority. Its great strength and durability are attributed to the method of retting the fiber under water in lieu of the mode usually adopted with American hemp, called dew-retting. Italian hemp is also of excellent quality, and for some uses unsurpassed. Manila hemp is perhaps more extensively used in the manufacture of cordage than any other material, as its great pliancy and strength particularly adapt it for the running rigging of vessels and for a multiplicity of ordinary uses. Russian and American hemp are preferred for standing rigging, owing to their ability to absorb a great amount of tar and to withstand the weather without shrinking or stretching. Sisal, from Yucatan, and East Indian jute are largely used for the manufacture of the cheaper grades of rope.

FRANK T. BULLEN'S new book "A Sack of Shakings," is published by McClure, Phillips & Co., New York. The author explains that "shakings" are the odds and ends of ropes and canvas accumulated during a voyage and were formerly the perquisites of the chief mate. Under this title Mr. Bullen, who is an F. R. G. S., has gathered a number of essays originally published in *The Spectator* where they gained considerable notice. It is upon the request of those who have read the papers with interest that Mr. Bullen now publishes them in book form. They are interesting notes on life at sea. Some of the essays bear these captions: The Porpoise Myth; The Floor of the Sea; Ocean Currents; Shakespeare and the Sea; Sea Etiquette; Sea Superstitions; Beneath the Surface; Voices of the Sea; The Undying Romance of the Sea; Sociable Fish, and Common Life on Board Ship.

THE SCHERZER ROLLING LIFT BRIDGE.

The six-track Scherzer rolling lift bridge across the Fort Point Channel at the entrance to the South Terminal Station, Boston, Mass., completed in January, 1900, has been in continuous use under very heavy traffic conditions since that time, and has proven so satisfactory that the Scherzer Rolling Lift Bridge Co., 1616 Monadnock Block, Chicago, has been authorized by the New York, New Haven and Hartford Railroad Co. to design, prepare plans and supervise the construction of a four-track Scherzer rolling lift bridge to be constructed across the Pequonnock river at Bridgeport, Conn. The new bridge is to replace the existing double-track swing bridge, which will be discarded and removed in the process of four-tracking the main lines of the New York, New Haven and Hartford Railroad Co. at this point.

The fact that it was necessary to remove the swing bridge in the process of four-tracking the line is a forcible illustration of one of the advantages of the Scherzer rolling lift bridge. Whenever railroad traffic increases, the additional tracks necessary can always be supplied by the addition of single or double-track Scherzer rolling lift bridges, without interfering with or requiring the removal of the existing Scherzer rolling lift bridge; whereas a single or double-track swing bridge must always be removed and replaced by a larger swing bridge whenever additional tracks are required. A large number of swing bridges have been removed and must be removed and discarded in the early future for this cause alone, owing to the growth of railroad traffic.

The new bridge will be deck structure. It will be composed of two parallel, double-track, movable spans, which may be operated jointly or singly, as desired. The motive power will be electricity, and the bridge will be opened or closed in less than thirty seconds, thus causing the least possible delay to railroad traffic from the opening of the bridge for the passage of vessels. The bridge will be designed to carry the heaviest loadings, in accordance with the specification of the New York, New Haven and Hartford Railroad Co., dated 1901.

VESSEL TRANSFERS.

Mr. John D. Gilchrist, son of Mr. J. C. Gilchrist, Cleveland, has purchased the schooner Angus Smith from John M. Thomas, of Duluth.

The schooner John A. Francomb has been sold to the Nelson B. Graves Lumber Co., of Black Rock, for \$14,000. She will be used in the lumber trade between Georgian Bay and Black Rock. The steamer Hebard was bought by the same firm for \$55,600.

The Hawgood fleet of three steel steamers, Tampico, Eureka and Meteor, have been sold to San Francisco people. The boats are full canal size, and, with the exception of the latter, now building at the Craig shipyard in Toledo, were built in 1899 and 1900 respectively. The figure quoted for the transfer is given as \$180,000 each or \$540,000 for the fleet.

W. E. Fitzgerald, of Milwaukee, F. D. Underwood, of Baltimore, W. M. Kellia, of Gladstone, and Kate Hebard, of Buffalo, have sold the steamer Hennepin, which registers 1,372 gross tons, to the Manistee Transit Co.

Leathem & Smith, of Sturgeon Bay, have sold the twenty-ton tug Sydney T. Smith, to Termensen & Jensen, of Sturgeon Bay, for \$8,000. They have also sold an eighth interest in the steamer J. L. Hurd, to H. N. Wanwig, of Chicago, for \$2,000.

Capt. W. C. Richardson, Cleveland, has sold the schooners, J. J. Barlum and H. A. Barr, to the Algoma Central Railway Co. The vessels are now British bottoms and will hereafter tow with the steamers brought over from the Clyde by Mr. F. H. Clergue. Messrs. A. Miscampbell, superintendent of the Algoma railroad, and E. V. Clergue, manager of the company's Michipicoten property, with the British consul, were required to make the transfer.

Capt. J. H. Bartow, Cleveland, and others have sold a half interest in the steel steamer J. W. Moore to Mr. Frank M. Osborne and his associates, who owned the other half of the boat. The Moore was sold at the rate of \$106,000 cash. The steamer will be managed by Mr. Osborne, who is president of the Pittsburg Coal Co.

THE Cunard Company contemplate fitting an instalment of the Marconi wireless telegraphy system on board their Atlantic steamers. They have had the matter under consideration for some time, and their officers have examined the system. Some improvements are, however, necessary before all its possibilities can be fully developed.

MONTREAL GRAIN ELEVATOR.

The Dominion Government has solved the grain elevator problem for the Montreal harbor board by agreeing to loan the commissioners the sum of \$1,000,000 at 3½ per cent., this sum to be applied on the erection of one or more elevators in the harbor.

This effectually disposes of the charters of Capt. Wolvin and others, that have been requested since Mr. Conners and his associates defaulted in their contract. The condition attached to the loan is that the elevator or elevators shall be under the sole control of the board, and all railways and other transportation lines shall have equal privileges. Mr. Conners will now be called upon to forfeit his deposit of \$50,000.

APPOINTMENT OF MASTERS.

Capt. A. B. Wolvin, general manager of the fleet owned by the United States Steel Corporation, has made the following appointments:

STEAMERS.

Bartlett, Capt. H. Culp
Bessemer, M. A. Boyce
Black, W. B. MacGregor
Briton, James A. Watts
Bunson, C. E. Moady
Cambria, J. A. Walsh
Colby, P. A. Peterson
Colgate, W. J. Hunt
Coralia, William Cumming
Cornell, C. L. Montague
Corona, Stephen Murphy
Corsica, A. J. Greenley
Cort, Frank Rice
Crescent City, A. R. Robinson
Eads, R. E. Byrne
Edenborn, George Bell
Ellwood, Harvey Mills
Empire City, R. F. Humble
Ericsson, C. G. Grant
Fairbairn, E. J. Crowley
Fulton, S. C. Allen
Gates, R. J. Lyons
German, Charles Hinslea
Gilbert, R. J. Cowley
Grecian, P. L. Millen
Griffin, J. F. Johns
Harvard, H. Peterson
Hill, F. P. Houghton
Houghton, H. W. Stone
Hoyt, J. H. Driscoll
Joliet, C. H. Bunker
Lafayette, F. A. Bailey
LaSalle, G. W. Pierce
Linn, J. W. Morgan
Malletta, F. Hoffman

BARGES.

Bell, E. L. Sawyer
Bryn Mawr, F. W. Night
Carrington, Oscar Olsen
Corliss, C. L. Durand
Fritz, A. McArthur
Hailey, O. W. Haldridge
Jenney, F. S. Tear
Krupp, A. Nardahl
Madeira, J. H. Collins
Magna, C. E. Copeland
Maida, A. G. Tappan
Malta, W. D. Graham
Manda, Charles Van Gorder
Manila, H. Gegaux
Marcia, A. W. Burrows
Martha, H. Kerr
Mara, Robert Brooks
Marsala, W. A. Reed
Nasmyth, W. H. Deck
Roebling, P. E. Ingraham
Russell, William McDonald

THE converted yacht Dorothea is to be sent to the Great Lakes by way of the St. Lawrence River and the Canadian canals for duty as drill and evolution vessel for the Naval Reserves of Illinois. She was purchased at the beginning of the Spanish war from her owner, by whom she had been employed as a pleasure yacht. The vessel is of 594 tons displacement, single screw, has a speed of 15 knots an hour, and carries 78 tons of coal. Her hull is of steel, and she was built in 1897 by the Cramps at Philadelphia. Length, 182.3 feet; beam, 23.3 feet; draft, 11.5 feet. The Dorothea is now at the Philadelphia Navy Yard, and before sailing will be deprived of her battery, for, according to the treaty between our Government and that of Great Britain, there can be but one armed vessel at a time on the lakes. The first duty this craft will perform will be the summer cruise of the Illinois Naval Reserves, and it is understood that the Navy Department is prepared to render much more assistance this year than heretofore, and it is hoped the experiment will prove a success. The Dorothea will probably remain on the lakes indefinitely.

NOTES.

THE first Atlantic line steamer of the Elder Dempster Co., the Lake Champlain, 9,000 tons, will leave Montreal May 3, to be followed weekly thereafter. S. J. Sharp is the Toronto agent for this favorite and well known line of steamers.

CHIEF Engineer Thomas Williamson, U. S. N., retired, has been assigned to active duty at Buffalo, N. Y. He will be in charge of the naval exhibit at the Exposition and will bring to that service a ripe experience and great executive ability.

MR. John P. Holland, inventor of the Holland submarine boat, lectured on "Submarine Boats" at the Carnegie Lyceum, New York, on the evening of April 22. Mr. Lewis Nixon introduced the lecturer to a large and appreciative audience.

THE Liverpool Merchant Service Review is responsible for the following item: "What can be expected if people will be so foolish as to christen their vessels with such an unsavory name as Jonah but that history should repeat itself and that the vessel should prove a veritable Jonah. Apparently, according to a telegram from Bilbao, a vessel of that name cheerfully went for the breakwater at that port, and found it with all hands. David Jones might have been a more appropriate name than Jonah."

WE read that Lady Dufferin "christened" the Shamrock. "Named" would have been just as good an expression, if not better. Yet it must be admitted that the verb "to christen" in the broad sense "to name" or "to christen," is used by many careful writers; and doubtless such usage will before long silence the punctilious critics. Boston Transcript. Nothing worse than the foregoing could be expected out of Boston anyway. The owner picks out or determines upon the name to be given and the christener christens. This is so with all new productions.

THE Kanawha & Ohio Co.'s new steamer Robert P. Gillham, has been equipped with a shaft made of the Bethlehem Steel Co.'s high-grade nickel-steel, hollow-forged on a mandrel and oil-tempered and annealed. The shaft will be fitted complete at the Bethlehem works with cranks and crank-pins of the same material, the pins being hollow. The piston-rods will also be made of nickel-steel. The steamer is expected to be in service about Aug. 1, and will cost approximately \$35,000 when finished. She will be used in the coal towing trade of the owners between the Kanawha river mines and Cincinnati and Louisville.

SMALL, MAYNARD & Co., of Boston, publish "The Handy Man Afloat and Ashore," by the Rev. G. Goodenough, a chaplain in the British Navy. Written from the point of view of one who is recognized as "the friend of all on board," with no executive duties and no relative rank to interfere with his intimacy with all alike, it presents an unbiased and interesting account of life in the British sea service. The spirit of smartness and readiness for duty which should exist aboard ship is illustrated by the reply of a bluejacket, who was asked by the landsman "What do you sailors do?" "Well," responded the sailor, "we does about what we please until we are told to do something else, and then we does that pretty quick."

I have not traced the individuals, but early in the week reports of association engineers joining steamers were quite frequent. There has also been some talk of the lake engineers forming an association of their own as distinct from coast and ocean rules. The hurry-up schedule framed by the M. E. B. A. for extra wages and help is found to be unworkable in many instances. A well-informed engineer that has been in the association, and also out of it, quotes one large line as paying \$1,350 for the season, railway fares and hotel bills paid spring and fall, and figures it equal to \$2,000 per year, check mailed each month during the winter and a sure job, with good, liberal treatment all round, and he didn't see where the kick came in.

WE have received the annual Shipbuilding Number of the MARINE RECORD of Cleveland (Ohio.). It is an interesting issue, and enlightens the poor Britisher upon American shipbuilding more than a little. But what worries us is the picture on the cover. Our Cleveland friends will gather our meaning when we say that when the man with the uplifted axe "lets her go" the pretty girls who are viewing a ship launch from the wrong end will feel hurt!—Syren and Shipping, London. There is positively a slight error in the foregoing, for we yield the palm to no one in gallantry to the ladies, God bless 'em. Needn't worry about our hurting the pretties, not by a long shot, though we plead guilty to not being in a position to stop the other fellow just in the nick of time and we hope it won't occur again.



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CLEVELAND, O., MAY 2, 1901.

UNDER ordinary conditions men can enlist in the army or
ship in the navy, but no one can ship in the army or enlist
in the navy—that is—as terms go.

ONE great bugbear in the late engineers' strike consisted
in the second engineer not always receiving as much pay as
the first mate. Jealousy! oh yes, there was lots of it
exhibited.

THE days of the tremendously extravagant fuel and oil
bills are fast being numbered in the lake trade. If ever there
was a "main hatch" in these expenditures, it is now about
being shut down.

GIVE us an advertisement for our annual roster and we
and all our members will trade with you. This is what has
been pushed against the ship supply men almost to a black-
mailing extent. It ought to cease.

IT is now quite a hand-full of years ago since the REC-
ORD advanced the argument that it would be found a paying
investment for the owners of steamboats to salary a shore
engineer. We note that the United States Steel Corporation
employs three of such practical experts. A ship's-hus-
band is an equal necessity for a large fleet.

A HEALTHY rivalry has been engendered in regulating the
running expenses, daily cost, or trip disbursements of a boat.
While this is a commendable feature from every standpoint
it ought never to be permitted to descend to the level of
parsimony in the food supply account, nor do we think it
will, among the majority of the present generation of lake
vessel owners and managers.

GERMANY is right after maritime supremacy on the ocean.
Not content with owning the *Potosi*, at present the largest
sailing ship afloat, and which is 360 feet by 49½ by 31 feet 2
inches, but the firm of F. Laeis, Hamburg, have just placed
an order with German shipbuilders for a sailing vessel which
will be 400 feet in length, 53½ feet beam and 33 feet 7½
inches deep, to carry 8,200 tons. Evidently, all faith in
jamming the wind is not yet extinct.

WE are pleased to note that a Montreal and Quebec trader
has now a handle, or if you please, a tail to his name, we
refer to Capt. Main, F. R. G. S. and F. R. M. S., sailing an
Allan Line steamer. Those who are not acquainted with
these apparently mystical initials may learn that they stand
for a Fellow of the Royal Geographical and Meteorological
Societies. Capt. Main is considered a high authority on
matters relating to the navigation of the St. Lawrence and
its approaches.

THE SEASON OPENING.

With the slightly delayed opening of lake navigation and
the consequent detention of vessels already in service,
through the ice blockade in the St. Clair river, the season
can not be said to have opened very auspiciously for the
owners of floating property.

The advent of an institution, or syndicate, like the United
States Steel Corporation, narrows the general business inter-
ests by the absorption of individual investments under
one management, and, to this extent, minimizes the expect-
ant ultimate results of a brisk season's work in the iron ore
carrying trade of the lakes, for, it is expected that this great
fleet of over one hundred vessels having a carrying capacity
of nearly half a million tons will be confined almost exclu-
sively to the transportation of the company's own products.

As the recent transfers of the Leyland Line tonnage, (reg-
arding which we have this week learned particulars of
from "across the pond") seemed to strike a sort of commer-
cial paralysis within the circle of minor shipowning inter-
ests, so did the combination exercise its influence among
large firms and individuals when the Steel Co. at an earlier
date, relieved several minor combinations of their vessel
owning managements on the lakes. It is our desire, how-
ever, to point out in this connection, that even the largest
aggregation of capital can not but figure on making a pay-
ing investment of each branch or department of their adven-
ture, and, consequently, where one set of interests can exist,
others engaged in a similar pursuit can surely survive, so
that a combination of interests in floating property by no
means argues for the total extinction of competition in the
transportation of waterborne traffic.

In so far as present indications may carry us, the outlook
for a fair season's business need call for no suspicion of dis-
couragement among the firms owning a moiety, or limited
amount of high classed tonnage, so also is there an open
field for the lower grades of bottoms in the lumber and coal
trades, both of which promises to be exceedingly brisk at
fair living rates of freight throughout the entire season, and,
especially is this so regarding the former commodity or
product. Granting that the Steel Corporation will trans-
port ten to twelve million tons of ore with its own tonnage
this season, it is simply a narrowing of the circle which con-
trolled this class of trade during the past year or two, and
that, too, without any very great disturbing effect on the
major portion of outside or individual, as opposed to corpora-
tive owned tonnage.

The keynote of the season's result seems to be found as
usual, only more marked than ever before, in the economi-
cal management, prompt dispatch at loading and discharg-
ing ports, and last, but by no means least, in the successful
handling and other contingencies entrusted to the care and
judgment of the practical employes of the ownership. The
keenest intelligence, prompted by efficient and skillful
knowledge will, as ever, be found the attributes which the
employe will be measured with by his employer, and, as
competition of the highest caliber is abroad, so must the
circumspect zeal of the trusted wage earner be made to
render the highest class of service in the accomplishment of
the duties he is called upon to perform as well as the re-
sponsibilities shouldered. Time was, when managerial mis-
understandings, minor casualties, breakdowns, etc., were
simply matters of general occurrence, expected and looked
upon as the exigencies of the situation and called for no
further comment or action. This condition of affairs has
now passed away, and, in the coming season, it can already
be seen that the very best and successful efforts alone will
be accepted as competent service at the hands of those
engaged in the business interests of lake commerce.

Ship and engine builders, boiler makers and underwriters
are called into being and are as much a necessity as their
own works warrant, but, it is just as well to remark, that it
is not the bounden province of the shipowner to be contin-
ually adding to the insatiable financial maw of, under other
conditions, their very good and excellent friends. To
obviate these frequent and nearly always undesirable calls,
is the prime duty of those engaged in the practical handling
of all classes of tonnage, and as we have said, this feature
will be more closely scanned this season than ever before.

NOTWITHSTANDING the shortness of the season, or rather
the later fitting out, employes' strikes and consequent higher
wages, etc., vessels may yet earn enough to pay insurance,
interest on the investment, cost of up keep, and allowance
for the depreciation of the property, but they will need to
be very fortunate to do so with the present ruling rate of
freights.

POLAR EXPEDITIONS.

History but repeats itself and this year witnesses much
the same interest in polar explorations that characterized
the dominant maritime powers just three score and ten
years ago. To the person engaged in the ordinary walks of
commercial life, there seems no relative good or cor-
responding advantages to be gained in simply having the
opportunity of saying that a human being has reached the
actual pole geographic, nor even to those who move over
the ocean's paths does the "game seem worth the candle,"
that is, the price that scientists will expend in their re-
searches. However, the toothsome dainty is on the top
shelf out of the ordinary juvenile reach, yet, the more dar-
ing and adventurous spirit will not rest until some means
has been hit upon to arrive at the taste delicious, and so it
is, or would appear to be, with the principals in polar expe-
ditions, Arctic and Antarctic.

It is to be regretted that the United States has not joined
the other powers maritime, including our neighbor, the
Dominion of Canada, in the several expeditions now being
fitted out for exploration purposes in high latitudes. The
practical turn of mind of the average American is wanted
to leaven the scientific lump of the professional technique
in galore carried north and south, and the field offers untold
necessities in the more useful, if prosaic, work of survey-
ing actual and possible navigational localities, and especially
so in the vicinity of the southern extremity of this
continent as well as in the extreme north-west.

About the middle of 1839 an expedition to the Antarctic
regions was fitted out under the auspices of the British
government with Sir James Clarke Ross in command and in
charge of the *Erebus*, with Capt. Crozier in the *Terror*, when
the two ships reached latitude 78° 11' South they encoun-
tered a solid wall of the impenetrable, which forbade them
from advancing another step further. A second attempt
was made during the long daylight of the polar regions
the following year, but with no better success, and, after
endeavoring to find an ingress through the solid wall of ice
which towered to the south of them, the expedition sought
the nearest port to pass the long, dark, polar winter, and to
make further preparations for renewed attempts at Antarctic
explorations, but beyond sighting a volcano or two in lati-
tude 69° and visiting an island named Victoria's Land in
latitude 65° S, previously sighted and named by a French
exploring party, but little more was discovered, and the ex-
pedition returned to its starting point after an absence of
about four years, 1839-43.

Soon after the return of this expedition Sir John Franklin
set out on his expedition to discover the North-west passage,
taking the same two ships, *Erebus* and *Terror*, in which
were nearly all the members of the crews which sailed in
the southern expedition, including Capt. Crozier. It is now
history that the *Erebus* and *Terror* were both lost with all
hands in the effort to discover the North-west passage if ex-
istent, considering the postulant argued to a probability.
Putting polar researches aside, it is beyond doubt or cavil
that the United States has not been doing a full share of
foreign survey work according to her grade among the
family of nations, and we would suggest that several survey-
ing expeditions be kept constantly at work in the future, es-
pecially in the undeveloped regions of the western hemi-
sphere.

THE ways of the Steamboat Inspection Service are inscrutable.
It is becoming a custom sanctified by individual
whims to grant pilots licenses for vessels carrying say 1,000
tons, but the same pilot is ineligible to stand watch on a boat
carrying 1,100 tons. There seems to us a good deal of a bur-
lesque in going through such a limited examination, irres-
pective of the candidates' fitness. The objective point ar-
rived at by the licensing board, or strictly speaking, the
local inspectors, is a vessel's tonnage, not her loaded draft
of water. There is an individual option exercised in granting
these licenses, which is not right.

FIVE handy lake-built steel steamers are being dispatched
to the Pacific coast to open up a new line there. The
Asuncion and *Paraguay* have already started, to be followed
by the *Eureka*, *Tampico* and the *Meteor*, the latter now
being completed at the yards of the Craig Ship Building Co.,
Toledo, O. The fleet is consigned to the Johnson-Locke
Mercantile Co., who will not as yet state what route they
are intended for. There seems no doubt but that a consider-
able fleet of these medium sized steamers could easily be
disposed of at fairly good figures if they could be had.

RELATIVE to the aberration in the audibility of sound, it transpires that the minute guns fired from Spithead on the occasion of the obsequies of the late Queen of England were inaudible at places not far removed from Spithead and heard distinctly at distances varying from 60 to 130 miles away. The wind at Spithead was from the north-west, while the distant places at which the sound of the guns were heard bore north-east from the firing point. The explanation is offered that layers of air of a different temperature intervened to prevent the passage of the sound made in certain directions and thus accounted for the guns not being heard at places other than on the north-easterly line. The waves of sound not unfrequently travel in a perpendicular or vertical semi-circular manner as distinct from the parallel or horizontal sweep. The foregoing is in reference to the article contained in our issue of the last week in questioning the advisability of entering St. Mary's river in a dense fog by the aid of the Detour fog signal, a method which was suggested by a naval officer as being a safe means of piloting for vessels proceeding through a dense fog bank.

THE slight tidal range noticed as being occasional if not prevalent on Lake Michigan, and also reported from Duluth, brings forward the well authenticated truism that the rise and fall of water called tidal range does not produce current unless under conditions of confinement or obstruction due to geographical formation, such as of shoal water, confined channels, estuaries, or river debouches supply. In this connection, the excellent work now being carried on in the St. Lawrence by Mr. W. Bell Dawson, in charge of the tidal survey, under the Department of Marine and Fisheries, is to be highly commended, as already the preliminary results of the tidal observations in the lower St. Lawrence is of increasing benefit to the tonnage frequenting those waters. In the interest of lake traffic, the question arises, why can't the Hydrographic Office, U. S. N., endeavor to tell us something regarding the set and drift of the surface and undercurrents prevailing on the several lakes?

THE total expenditure charged to capital account on the original construction and the enlargement of the several canals of the Dominion up to June 30, 1900, was \$79,043,784.09. A further sum of \$16,272,125.98 was expended on the repairs, maintenance, and operation of these works, making a total of \$95,316,910.07. The total revenue derived, including tolls and rentals on lands and water power amounted to \$12,401,917.32. The total expenditure for the fiscal year ended June 30, 1900, was: Construction and enlargement \$2,638,564.92, and a further sum of \$711,600.06, for repairs, renewals, and operation, making a total for the year of \$3,351,164.99. The total net revenue collected for the fiscal year was \$322,642.86, a decrease compared with the net revenue of the previous year of \$46,401.52.

RAFTING timber for transportation in bulk is not cheating vessels out of freight to the extent that some people may think. It is stated by the Evening Telegram, Portland, Ore., that a raft of 10,000,000 feet is being constructed at Westport, on the Columbia river, by the Robertson Raft Co., for transportation across the Pacific. If the cost of construction, towage expenses, and risk, is taking into consideration, there will not be a great deal of gilt left after the safe delivery of the timber, over and above the c. i. f. terms of the ordinary method of shipment. Ocean raft towing ought to be strenuously discountenanced though, as it is a horrible menace to navigation and incalculably more dangerous than when the timber is enclosed in an old hull.

IT is charming to note that dredges, mud barges, tugs and even the miscellaneous fleet of tonnage owned at minor lake ports are being prepared to go into "commission." Lake dailies put craft into commission when their fit-out may be summed up in placing a corn broom and a paint pot aboard "In commission," as regards lake tonnage, and its sister term, "in ordinary" are transplanted naval terms which in no sense can apply to indiscriminate bottoms, nor point of correct parlance, to any portion of a commercial or mercantile marine. These phrases should therefore be blue pencilled, or as the equally positive if inelegant saying has it, "cut it out."

Now that labor and capital is again yoked together as a willing team, it is to be hoped that nothing further will occur to mar the successful completion of a prosperous season.

IN AN article on submarine boats contained in the April North American Review, Rear Admiral George W. Melville, Engineer-in-Chief of the United States Navy, says that "The boats are either valuable or they are worthless for military purposes." In another paragraph it is stated that "From a military standpoint, the field of submarine local construction should be made as large as possible." But why from a military standpoint? Admiral Melville is just as much an old sailor as any person with a mechanic's training can ever hope to become, and, consequently, he ought not to get so inextricably confusing in mixing both arms of the National service. But there, sailors are all more or less soldiers, anyway—bad cess to it!

Now that American capital seems desirous of exploiting industrial projects in Canada, it seems rather singular to learn that a popular opposition to some of the enterprises is being developed by the citizens of the Dominion. Our Canadian friends would do well to consider if it is not better to be exploited now than never to be exploited at all. Our shy cousins, like bashful maidens, probably require a little pressing to aid in the methods of these exploitations, then, a nolens volens—consenting sort of an attitude might be found to prevail. Brother Jonathan only wants to develop, not to rob Miss Canada of her natural wealth.

THE German government has asked the British Board of Trade to co-operate in securing a more rigid observance to the North Atlantic Lane Routes. The present lanes are rendered exceedingly dangerous by reason of the fleets of fishing vessels which are invariably met with in thick weather on the banks. The fishing industry must be carried on and protected, while large, full powered Atlantic line steamers could, at the expense of a few hours time, fuel, etc., keep slightly farther to the southward of the present routes, thereby avoiding danger to life and property.

EVERY important fog signal on our coasts (and there surely is not one that is unimportant) should be tested under different weather conditions so as to obtain its characteristics. The Light-House Board can not be held totally irresponsible for the loss of one hundred and a quarter lives, as well as a valuable ship and cargo, right in the jaws of the Golden Gate, unless it can be proven that the unreliability of the fog signals in that locality was of common knowledge, had been widely advertised and universally made known. If a sound had been heard from the shore the Rio de Janeiro would not have been lost.

TWO strandings in piloting the length of Lake Michigan is the record of the Canada-Atlantic line's steel steamer Ottawa this week. It would be a boon to the entire lake marine if an official investigation would show why this vessel was led around by the nose as she was. If faulty compass adjustments caused the loss, let the culprit be made known, and equally so if the piloting was unskillful.

SHIPPERS realized the futility of forcing vessels loaded with their grain out of Chicago this week, and therefore left the matter in the hands of those most nearly interested in the safety of the hulls and the proper delivery of their cargoes at the port of destination. Let it be understood that vessel owners are the least desirous of seeing their floating property lying idle.

AFTER a series of years the Treasury Department discovers that there is one more man in the entire lake district worthy of awarding a life-saving medal to. The intended recipient is Capt. John Farrell, Buffalo.

FIRST-CLASS lake pilots can do much this season towards the financial prosperity of underwriters, shipbuilders and dry-dock proprietors. Owners will come out at the wrong end of the horn in any and every case.

A MOVEMENT is on foot to bring all labor unions on the lakes into the ranks of the Federation of Labor. The most marked feature is to associate all callings in the sailing community.

AS regards the Pan-American Exposition, it is safe to say that a majority of the sailing fraternity of the lakes will pay one or more visits to the great show.

THE GEORGIAN BAY CANAL.

One of the most eminent civil engineers of Europe, Mr. Sawyer, was several months ago sent to Canada by English capitalists to look into the projected Georgian Bay canal and report whether it would likely prove a profitable investment if \$65,000,000 were expended to carry the undertaking through. After examining other waterways on this continent, he reported that he was confident the canal would pay four per cent. on the money invested. He said it would divert Buffalo's grain traffic through Montreal and this would mean one million to eight million tons instead of about twenty-two million bushels, as at present.

"The lowest rate at present for the exportation of grain via the lakes and Buffalo route is about four and three-quarter cents from Chicago to New York," said Mr. Sawyer, "and this is one and a quarter cents from Chicago to Buffalo and three and a half cents for the railroad haul from Buffalo to New York.

"Two steamers leaving Chicago loaded with grain, one bound for Buffalo and the other for Montreal, would travel about the same distance. It would cost the Buffalo steamer one and one-fourth cents a bushel to land the grain at Buffalo. The steamer bound to Montreal would travel 903 miles and would land grain in Montreal at three cents a bushel. A cent and a half of this would be for freight and one and a half cents for canal tolls. The three-cent grain at Montreal would stand in the same position for Atlantic shipment as the five-cent grain did which now reaches New York via Buffalo.

"The Armour's, of Chicago, expressed the opinion that if the three-cent rate could be given the canal would get all the traffic it could accommodate. The canal could be constructed in three years."

OHIO HARBOR SOUNDINGS.

The U. S. Engineer, stationed at Cleveland, has recently made surveys at the various ports and finds that now there is a sufficient depth of water in all of the channels to permit the passage of the greatest draught. The bar has been dredged away from Fairport harbor, the government dredge doing the job. An examination of the harbor at Conneaut shows that while the channel is a little crooked, it is nevertheless twenty feet deep its entire length. A map of this is to be issued soon. The river at Ashtabula has been much talked of. Colonel Mansfield, Corps of Engineers, U. S. A., has caused a survey of that to be made, and its condition will be known soon. The preliminary survey shows that the shallowest water is more than seventeen feet. A more careful survey may show different results. The entrance at Cleveland has a mean depth of over twenty-one feet below the Lake Shore bridge, which is entirely satisfactory for all purposes. Sandusky Bay is also in good condition, the channels not having been disturbed during the winter.

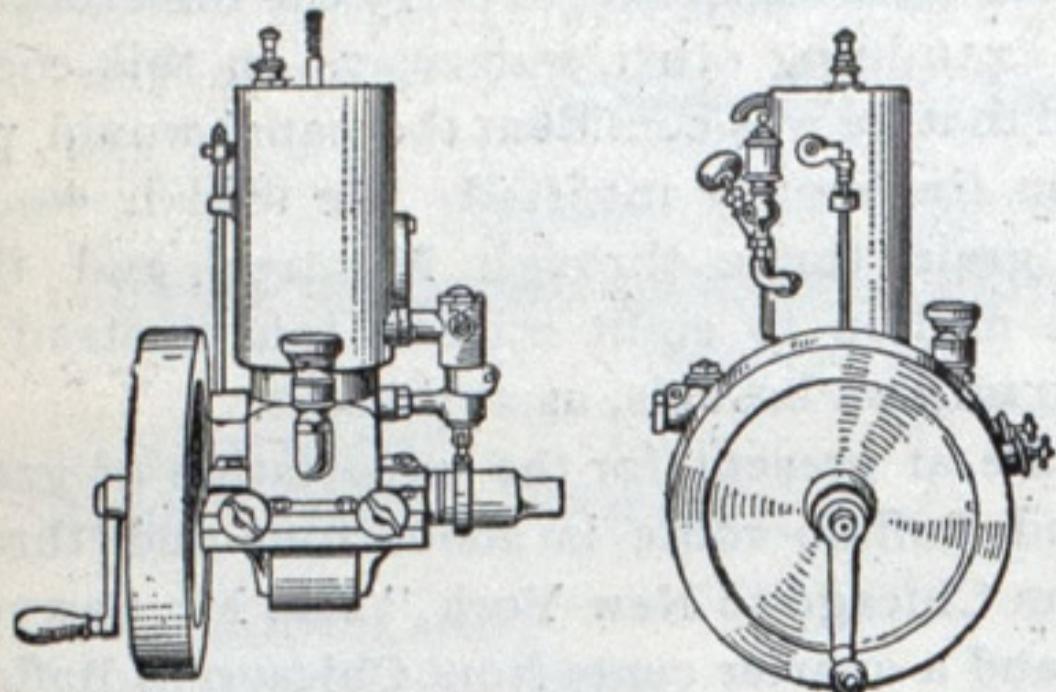
LAKE AND TRANS-OCEANIC TRAFFIC.

In regard to the possibilities of lake and Atlantic traffic to Europe, it has been said by some that New York will be a sufferer and will lose a great amount of commerce. Others, deeply interested in the matter, have decided that it will not be so bad after all. They have calculated that the expense will be high to take boats via the Great Lakes to the ports of Europe. At the Welland canal the boats will have to pay 2 cents a ton toll. A pilot through the St. Lawrence will cost \$100. Then comes one of the heavy items of the passage—the insurance in the St. Lawrence river passage. On some boats taken down a year or so ago, the insurance companies charged 4 per cent. of the value of the vessel. At this rate it would cost the Northwestern steamers \$7,400 for insurance alone between the lakes and the Atlantic. To be added to the above are the dangers of the shallows of the St. Lawrence to Montreal, and then from there to the open sea. It takes quite a considerable share of the freight to balance this, and New York is not in such great danger of losing its seaport traffic and what goes with it after all.

BREAK IN THE WELLAND CANAL.

Navigation in the Welland canal was brought to an end for a week or more by the steamer D. R. Van Allen, which carried away four gates of lock No. 6 on Wednesday. This lock is located near St. Catherines. The Van Allen was bound from Toledo to Toronto with coal. She is owned by the Electric Light Co., of Toronto, and is an old canal steamer registering 271 tons. The loss which the steamer must pay, will cover a fair share of her value.

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THE DEPARTURE OF A PIONEER LAKE PILOT.

Capt. Eddy Irons, the oldest resident of Pentwater, Mich., is dead, aged 96 years. Mr. Irons was a well known vessel captain on the lakes when most of the men who are now counted as lake captains were in their infancy. He was the father of the late Capt. Orris Irons, and grandfather of Capt. Eddy Irons, now on the fire tug John C. Mann at Ashland, Wis. The last few years of his life were passed quietly with his sister in a little cottage on the bank of Pentwater lake. He retained his faculties until the last, with the exception of his sight, which had become too dim to enable him to read. His memory, reaching back to the early part of last century, made him a very interesting person to listen to.

Capt. Irons was probably the first captain to enter Chicago with a vessel of any size. Some time in the '30s he left Lake Ontario with the schooner Eliza Ward with a cargo of merchandise for several different places on Lake Michigan. Freight for Grand Rapids was landed at the mouth of Grand river, to be taken up the river by small boats. At that time there were only two or three houses at Grand Haven. Freight was also landed at Milwaukee, Racine (then called Root river,) Kenosha (then called Pike river), Michigan City and Chicago.

At the mouth of the Chicago river there was a pier where the freight was unloaded. While lying at the pier the wind and sea became so strong as to prevent the vessel from being taken into deep water, and she was in danger of being wrecked. Capt. Irons ran a line to an oak tree on the bank of the river and hove the schooner over the bar into the river, and after the sea went down hove her out again, thus probably being the first man to enter Chicago river with a boat of any size.

The Eliza Ward was a schooner of 110 tons, and Capt. Irons did the greater part of the work of building her, even to making the sails. Her timbers were natural crooks of chestnut.

A SAILOR ARTIST.

Through a marine picture Charles Hallberg, a janitor for the Austin State Bank, Chicago, has at last won the notice and praise of some of the best qualified art critics and artists.

As a painter Mr. Hallberg gained a place upon the wall of the art institute. His picture, "The Open Sea," now hangs above a Turner water color; at its right is a portrait study by Zorn; at its left is a picture by Sir Frederick Leighton. In the same rooms are Israel, Corot, Daubigny, Whistler, Chase and Rosetti.

Hallberg has had no teacher. His knowledge of pigments is the result of tedious years of experiment. For 17 years of his early life he was a sailor. He knew the ocean and loved it. Illiterate, imaginative and already a grown man, he wished to tell his stories of the sea. He could not write them, so he tried to paint them, feebly at first, but with growing power and fidelity.

Speaking of Mr. Hallberg's latest work, "The Open Sea," Director French of the Art Institute said:

"Alexander Harrison, Mr. Vanderpool, Charles Francis Browne and other capable judges agree with me that it is a most remarkable work, considering the artist's opportunities. Its chief merit probably lies in the wonderful vitality he has imparted to the water. The water he paints is fairly alive."

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OSWEGO'S CAPTAINS.

While not the flourishing lake port that it once was, Oswego has yet quite a few well known lake masters and pilots residing within her borders, among which may be mentioned: Capt. Wm. Griffin, steamer Monteagle; Capt. P. Griffin, steamer Parnell; Capt. D. Hourigan, steamer Hecla; Capt. M. Hourigan, barge Sherman; Capt. James Backin, barge Carney; Capt. John Barclay, schooner T. S. Fassett; Capt. Wm. Kelly, schooner John Magee; Capt. T. Donovan, steamer J. E. Hall; Capt. George Donovan, schooner J. R. Noyes; Capt. Charles Bough, schooner Peterson; Capt. Geo. Williams, schooner Crete; Capt. Michael Pidgeon, schooner E. D. Ewen; Capt. Thomas Beggs, steamer Niko; Capt. Patrick Meagher, Niko's consort; Capt. John R. Preston, steamer Geo. W. Roby.

A LOST BARGAIN.

During the Spanish-American imbroglio the government bought the steamer Terry for an army transport at the price of \$170,000, but when recently the ship was put up at auction, the highest bid was \$37,000. Rather than accept such a loss the quartermaster's department will send the Terry to the Philippines, to be used as a hospital ship for the navy. Thus a very pretty bargain has slipped through the fingers of a clique of ship owners who wanted the vessel for summer excursions on Long Island Sound, and were unwilling to pay a fair price for her. No doubt others were also bid.

VISIBLE SUPPLY OF GRAIN.

As compiled for THE MARINE RECORD, by George F. Stone, Secretary Chicago Board of Trade.

CITIES WHERE STORED.	WHEAT. Bushels.	CORN. Bushels.	OATS. Bushels.	RYE. Bushels.	BARLEY. Bushels.
Buffalo	1,473,000				61,000
" afloat	168,000				
Chicago	1,026,000	5,918,000	2,778,000	417,000	197,000
" afloat	1,443,000	1,096,000	140,000		
Detroit	242,000	415,000		19,000	14,000
Duluth	10,093,000	5,400,000	133,000	414,000	74,000
" afloat	138,000				
Fort William, Ont.	2,195,000				
Milwaukee	897,000	733,000	395,000	1,000	15,000
" afloat	75,000	331,000	472,000		72,000
Port Arthur, Ont.	250,000				
Toledo	705,000	668,000	238,000	1,000	1,000
On Canals					
On Lakes	612,000	1,177,000	2,044,000		50,000
On Miss. River	88,000	20,000			
Grand Total	48,352,000	19,295,000	12,364,000	970,000	696,000
Corresponding Date, 1899	52,472,000	21,918,000	7,987,000		1,251,000
Increase					1,099,000
Decrease	1,516,000	2,033,000	1,453,000	42,000	22,000

While the stock of grain at lake ports only is here given the total shows the figures for the entire country except the Pacific Slope.

The New York and Texas Steamship Co.'s steamer Denver was launched last Thursday from the Harlan and Hollingsworth yard, Wilmington, Del. An innovation in the christening was the substitution of the Japanese custom of releasing white doves from a box as the steamer started from the ways, instead of breaking a bottle of wine over the bow. The doves were covered with pieces of white paper, which floated through the air as the doves flew from the box.

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EASTERN FREIGHT REPORT.

Messrs. Funch, Edye & Co., New York, report the condition of the eastern freight market as follows:

There is little, if any, change to report in our freight market, rates in all directions remaining practically unaltered. Grain chartering has been on a very limited scale and owners have been unable to secure any higher figures than last quoted. The principal feature of the market is the increased business transacted in coal charters from this coast to the Mediterranean, which has doubtless been brought about by the imposition of a tax on the exportation of British coal; whether the shipments of coal from the United States Atlantic ports will continue it is difficult to predict. Chartering from the Gulf for general cargo is practically at a standstill, but there has been some little business done in timber charters at about the same rates as recently paid. For long voyage trades two more steamers have been taken for case oil, both to Japan, which fills shippers' requirements in that direction for the time being.

Business in sail tonnage continues of a limited character and confined principally to deep water trades upon the basis of former fixtures. There has been little more enquiry for River Plate lumber vessels from the Gulf at \$14 00, but little business has resulted as yet.

GUIDED BY TELEPHONE.

An eastern man has invented some sort of device whereby steamers in a fog can be guided safely into harbor by means of telephone messages. Just how this is to be done isn't clear, but it is claimed that the invention is a complete success. If it is, we may expect that the befogged steamer captain will be advised by a cheerful voice to "Steer a little more to the right, please. Yes, hold that. Do you get me clearly? Yes, thank you. Little to the left. That's right. Steady. All well on board? That's nice. Slow down. Now to the right and steam ahead. Rather a close shave, but you are all right. Hold it. Now five points to the left and go ahead at full speed. There you are. Slow down. Stop the engines and let her drift. Here you are at your dock. Don't mention it. Goodby."

Let us all hope that when the befogged captain halts his big ship outside the unseen harbor he will not be greeted with the tart rejoinder, "Line's busy," when he calls for advice and aid.—Plain Dealer, Cleveland.

TRIPLE LAUNCHING OF TORPEDO BOAT DESTROYERS.

An event which never before occurred in this country will be presented by the Maryland Steel Co. at Sparrow's Point, Md., early in May, when a triple launching will take place there. The vessels will be the torpedo boat destroyers, Truxton, Whipple and Worden, the biggest and swiftest vessels of their class in the United States. Arrangements are now being made for this interesting event, which will include three distinguished launching parties. The vessels are to steam thirty knots an hour and each is 248 feet long and registers 433 tons.

Sailors at Philadelphia and neighboring seaports are becoming scarce, owing to the fact that hundreds are leaving for the Great Lakes where wages are higher and work is lighter.

THE FISHERIES.

STATISTICS SHOWING THE IMPORTANCE OF THIS VAST INDUSTRY.

The United States Government by its elaborate display at the Pan-American Exposition, of fish and fish productions, will do a great deal towards enlightening the general public in regard to the importance of this vast industry.

At the present time about sixty million dollars are invested in the United States fisheries, which give employment to two hundred thousand persons, producing annually about fifty million dollars worth of the various forms of fish.

Although the great bulk of this business is carried on along the Atlantic and Pacific coasts, there is invested in the fisheries of the Great Lakes more than six million dollars, which yield to the fishermen two million six hundred thousand dollars per year, requiring the services of ten thousand persons.

The different productions of the fisheries form an important factor in the food supply of the country. A great deal of it is sold fresh, while a large quantity is salted or dried and the canned product that is now put up in so many attractive ways may be seen on the shelves of every grocery store in the land. It is also noticeable that this trade is constantly increasing.

In the department of fish and fisheries at the Exposition, a section is devoted to products indirectly connected with the business. These different forms are called secondary products, the value of which is also considerable and increasing rapidly from year to year. The principal of these are glues, fertilizers, oils and isinglass. The following synopsis will serve to give an idea of the character of this section of the exhibit:

Vessels—Models of vessels used in the cod, halibut, mackerel, oyster, menhaden, whale, sponge and other fisheries of the Atlantic and Pacific.

Boats—Models of types used in the important commercial fisheries.

Nets—Models of the various forms of pound nets, seines, cast nets, dip nets, etc.

Lines—Trawls, hand-lines, etc.

Appliances for seining—Rakes for oysters and clams, tongs, hooks for sponge.

Appliances for striking—Whaling guns, bomb lances, spears, lances used in the seal fishery, eel gigs, etc.

Accessories—Disgorgers, hooks, extractors, mittens, clubs, etc.

What cannot be shown by these actual appliances will be faithfully represented by a collection of photographs showing methods employed in fisheries throughout the United States, giving the many local peculiarities devised and employed in different sections of the country.

In addition to all this, mounted fish to the number of one hundred and fifty casts of marine and fresh water fishes, most of them being almost as natural as life, will give a better idea of the beauty and value of this production than any written or verbal description could possibly do.

RUSSIAN PIG IRON.

The first cargo of Russian pig iron has been dispatched from Kertch for delivery at Marseilles. The Russian press consider this an important event in the history of Russian metallurgy, as laying the possible foundation of an export trade in Russian iron. In the present instance the proximity of the works to the port of Kertch, and the low cost of transport by sea, offer great facilities.

REPORTED BY THE LOOKOUT.

Cross-Examination.—Four-year-old Harry was whipped by his pa for telling a falsehood, and ran to his ma for consolation. Ma: "When I was your age I never told a falsehood." Harry: "When did you begin, ma?"

Missionary (captured by cannibals, desperately—I—er—hope your highness is observing Lent, and as this is Friday you will not eat me at the earliest until Saturday or Sunday. Cannibal King (grimly)—Silence! You are a lobster and come under the head of shellfish!

There are over forty steamers afloat whose sole work is the laying and maintenance of the world's vast system of telegraph cables; seven of these belong to government administration, and the remainder to manufacturers and cable operating companies. Ten of the cable laying ships are owned by the three largest English cable manufacturers; one of the largest of these cable ships is of about 5,000 tons displacement, with a carrying capacity of 8,000 tons, and has carried 2,500 nautical miles of deep sea cable in one trip.

The parson, in concluding a very eloquent sermon, asked all the members of his congregation who wished to go to heaven to stand up. He then asked those who wished to go to hell to also stand up. Evidently the commotion of the congregation sitting down had aroused one slumberer (one of the deacons), who upon the latter question being put immediately jumped up, and gazing round remarked that he didn't know what they were voting upon, but he could see that he and the "chairman" (i. e. parson) were in a hopeless minority.—The Liverpool Journal of Commerce.

"No, the mermaids never marry," said Neptune to the inquisitive stranger, who had just arrived in a diving-bell. "And may I ask why not?" "Well, our chief difficulty down here," replied Neptune, "is to strike a match." As proof of the correctness of his theory, the sea-god was obliged to turn his back to windward to light a cigarette.—The Marine Journal.

Courts of law are not invariably infallible, but it is beyond question that once in a while judges hit it right. "Frinstance," an action was brought by a sailor before a United States commissioner sitting somewhere in Florida, alleging bad treatment at the hands of the captain and asking for a discharge, which cause being heard by the learned court, the following order was entered: "Decided, that knocking a man overboard, throwing him onto the deck twice, keeping a dog chained in the gangway and a loaded pistol ready to shoot him if he came aboard, was equivalent to a discharge. So ordered."

"That man," said Capt. Holland of one of wrecker Scott's men on the wharf to-day, to a friend who was visiting him—"that man started in business 15 years ago, and he has been going down ever since." "What did you say he was?" asked the visitor. "A diver" responded Capt. Holland brutally.—New London Day.

The Grand River Transportation Line, which will connect at Grand Haven with the Goodrich and Barry lines from Chicago and with the Crosby line for Milwaukee and run 48 miles up the river to Grand Rapids, expects to have its boats on the route in a week. The two steamers connect with a third which carries excursionists from the river to Spring Lake. The boats draw about 22 inches each and are flat bottomed packets formerly in use on the Mississippi river. The City of Grand Haven and the City of Grand Rapids will make the Grand river run and the Vera will go to Spring Lake.

OFFICERS OF ALGOMA CENTRAL STEAMSHIP LINE.

Algoma Central Railway Co.'s Line. (Clergue interests). Mr. A. Miscampbell, superintendent; F. B. Foote, port captain.

Minnie M—Capt. A. A. Batten, master; J. Grimes, chief engineer; A. Carss, purser; S. Fitzgerald, steward.

Ossifrage.—Capt. J. Hursley, master; J. L. Smith, chief engineer; T. J. Burk, purser; J. McFadzen, steward.

Philadelphia.—Capt. B. Burk, master; T. Horgan, chief engineer.

Bertha Endress.—Capt. T. Hill, master; D. Jones, chief engineer.

Ocean steamers—Theano.—Capt. A. W. Stonehouse, master; H. McLaughlin, chief engineer.

Paliki.—Capt. T. C. Macoubrey, master; T. Wyndham, chief engineer.

Leafield.—Capt. J. Davidson, master; J. Fraser, chief engineer.

Monkshaven.—Capt. A. Gilchrist, master.

NOTICE TO MARINERS.

LIGHT-HOUSE ESTABLISHMENT, }
OFFICE OF THE LIGHT HOUSE INSPECTOR, }
TENTH DISTRICT, BUFFALO, N. Y., April 26, 1901. }

Sandusky Harbor, Lake Erie, Ohio: Notice is hereby given that on April 23, 1901, two red 20 ft. spar-buoys, Nos. 28 and 30, were established to mark the northerly line of the main dock channel in Sandusky Harbor, Ohio, and four red 20 ft. spar-buoys, Nos. 32, 34, 36, 38, and two black 20 ft. spar-buoys, Nos. 15 and 17, were established to mark the extension of the main dock channel from the general dock front to the wharves of the Columbus, Sandusky and Hocking Railroad.

By authority of the Light-House Board:

A. DUNLAP, Commander, U. S. N.
Inspector 10th Light-House District.

MARINE PATENTS ISSUED.

Patents issued April 30, 1901. Reported especially for the MARINE RECORD. We furnish complete copies of patents at the rate of 10 cents each.

671,983. Marine engine governor, Sidney J. Sydney, Boston, Mass., assignor of one-fourth to Emile Muller, New Orleans, La.

672,123. Apparatus for recording speed of ships. Alfred G. Delaney, New York, N. Y.

672,287. Propelling vessels. John G. Pinkert, Hamburg, Germany.

672,356. Movable ring for mooring ships. Adrien G. D. Martin, Herblay, France.

Mike (to the chemist)—"The doctor said: 'Take wan of these pills three times a day.' I took wan of them wan't, but the man doesn't live that kin take wan of them three times."



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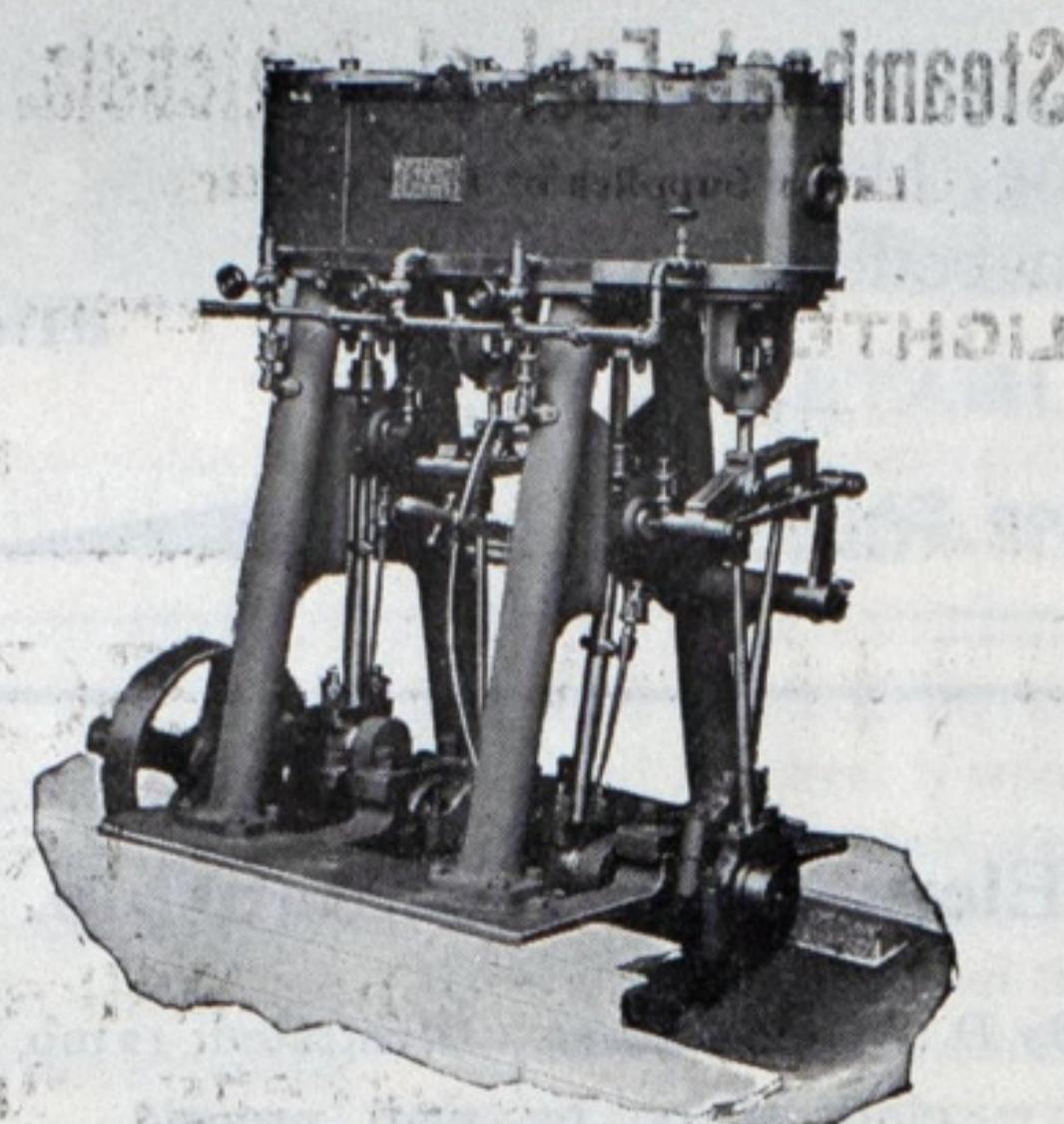
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The Republic Iron Co.'s steamers America, Brazil, Thomas Mayham and Chili.

Mitchell Transportation Co.'s steamer Hendrick S. Holden.

Minnesota Iron Co.'s steamer Presque Isle. American Steel Barge Co.'s steamer Alex. McDougall.

Lake Michigan & Lake Superior Transportation Co.'s steamer Manitou.

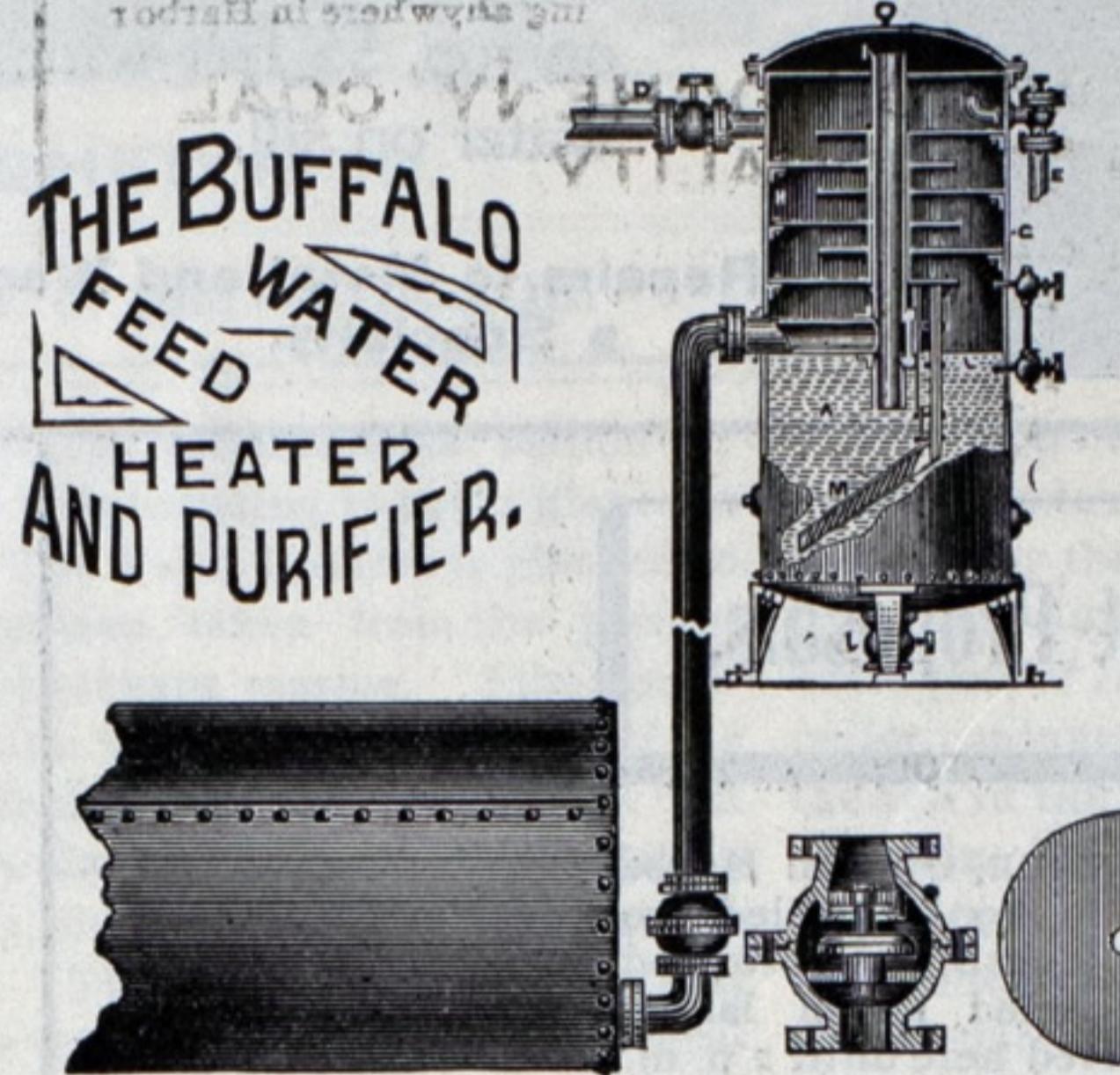
Bessemer Steamship Co.'s steamers S. F. B. Morse and Douglas Houghton.

American Transportation Co.'s steamers John Harper and Alex. Nimick.

Red Star Line's steamers Robert Mills and Wyoming.

Wilson Transit Line's steamers W. D. Rees and Andrew Carnegie.

And the steamer William R. Linn.



Standard Books

ON MARINE SUBJECTS.

NAVAL ARCHITECT'S AND SHIPBUILDER'S POCKET BOOK. Clement Mackrow. Formulae, rules and tables, and marine engineers' and surveyors' Handy Book of Reference. Fifth edition. 700 pages; pocket-book form. \$5.00.

A MANUAL OF MARINE ENGINEERING. A. E. Seaton. Designing, construction and working of marine machinery. \$6.00.

NAVAL ARCHITECTURE: A MANUAL ON LAYING OFF IRON AND STEEL VESSELS. Thos. H. Watson. Valuable for naval architects as well as beginners in ship yards. \$5.00.

RESISTANCE AND PROPULSION OF SHIPS. By William F. Durand, Principal of the School of Marine Construction, Cornell University. 431 pages, 116 figures. \$5.00.

PRACTICAL ADVICE FOR MARINE ENGINEERS. This is a valuable little book, with 64 illustrations. By Charles W. Roberts. \$1.00.

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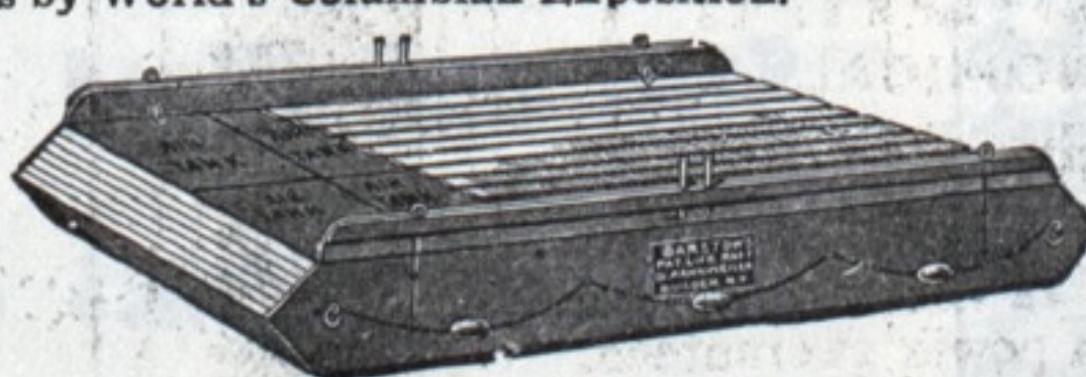
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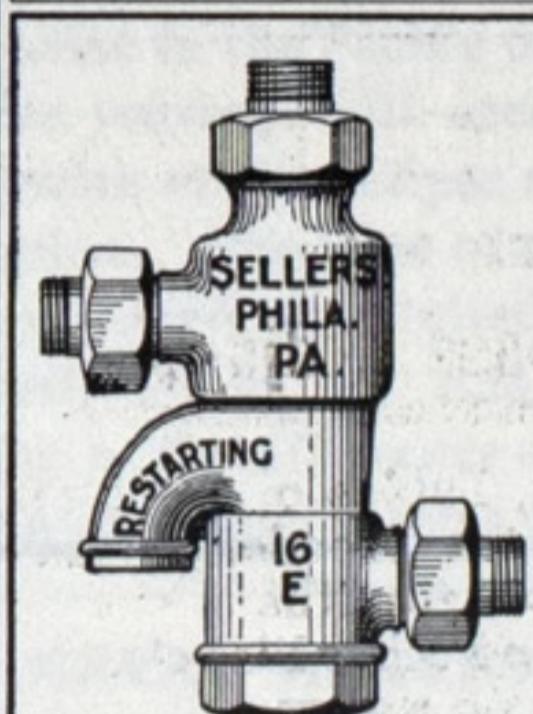


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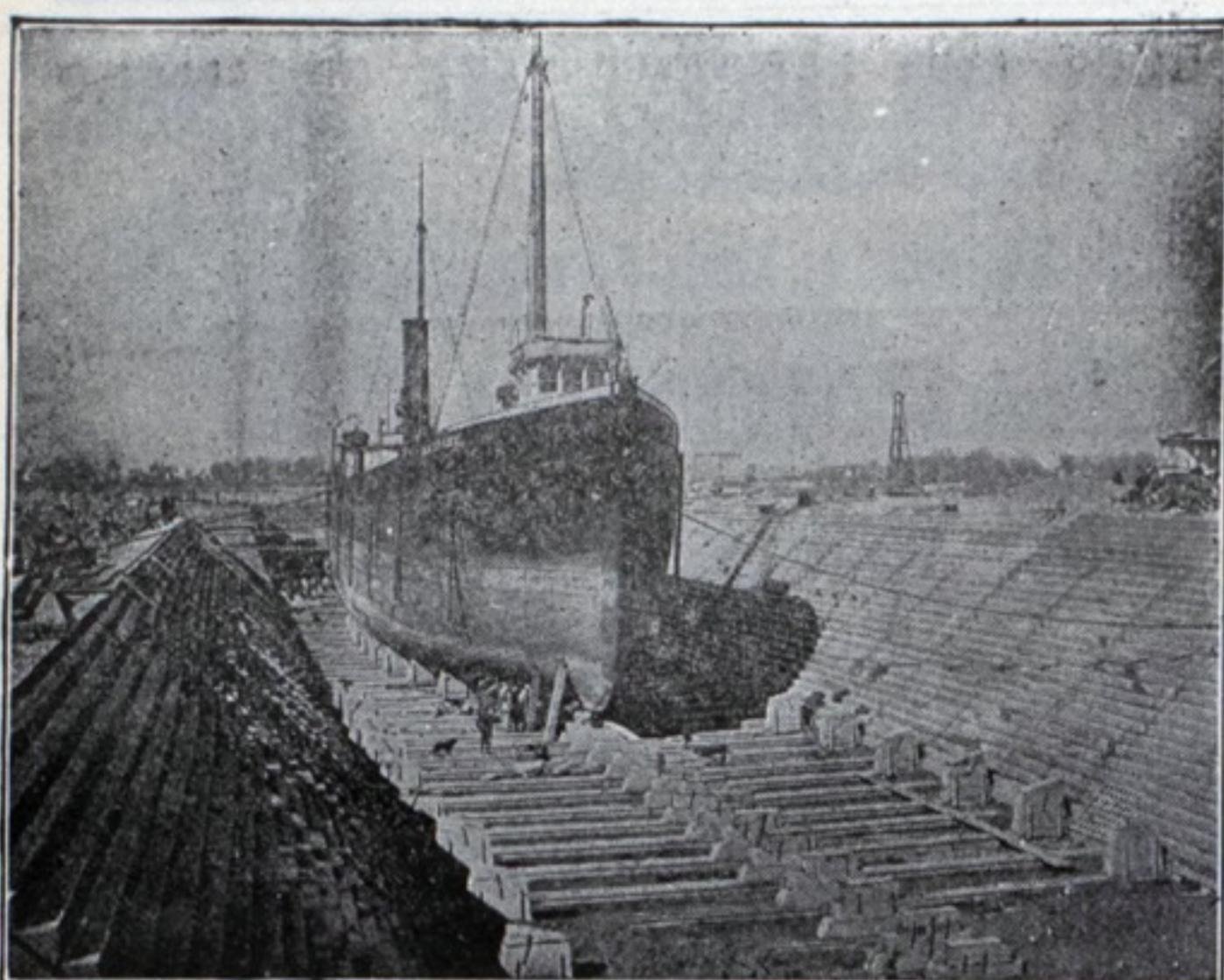
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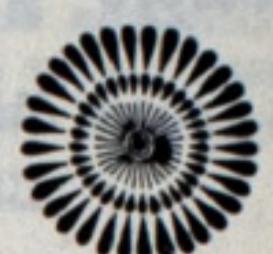
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Government Proposals.

U. S. ENGINEER OFFICE, Custom House, Cincinnati, O., April 9, 1901. Sealed proposals for one 30-foot length, flat-bottomed, steel-hulled, stern-wheeled steam launch complete, will be received here until 2 p. m., May 14, 1901, and then publicly opened. Information furnished on application. WM. H. BIXBY, Major, Engrs. 16-19

U. S. ENGINEER OFFICE, Custom House, Cincinnati, O., April 24, 1901. Sealed proposals for hire of one or more dredging plants, each consisting of one dredge, one towboat, and three dump scows, for use on Ohio river, will be received here until 2 p. m., May 29, 1901, and then publicly opened. Information furnished on application. WM. H. BIXBY, Maj., Engrs. 18-21

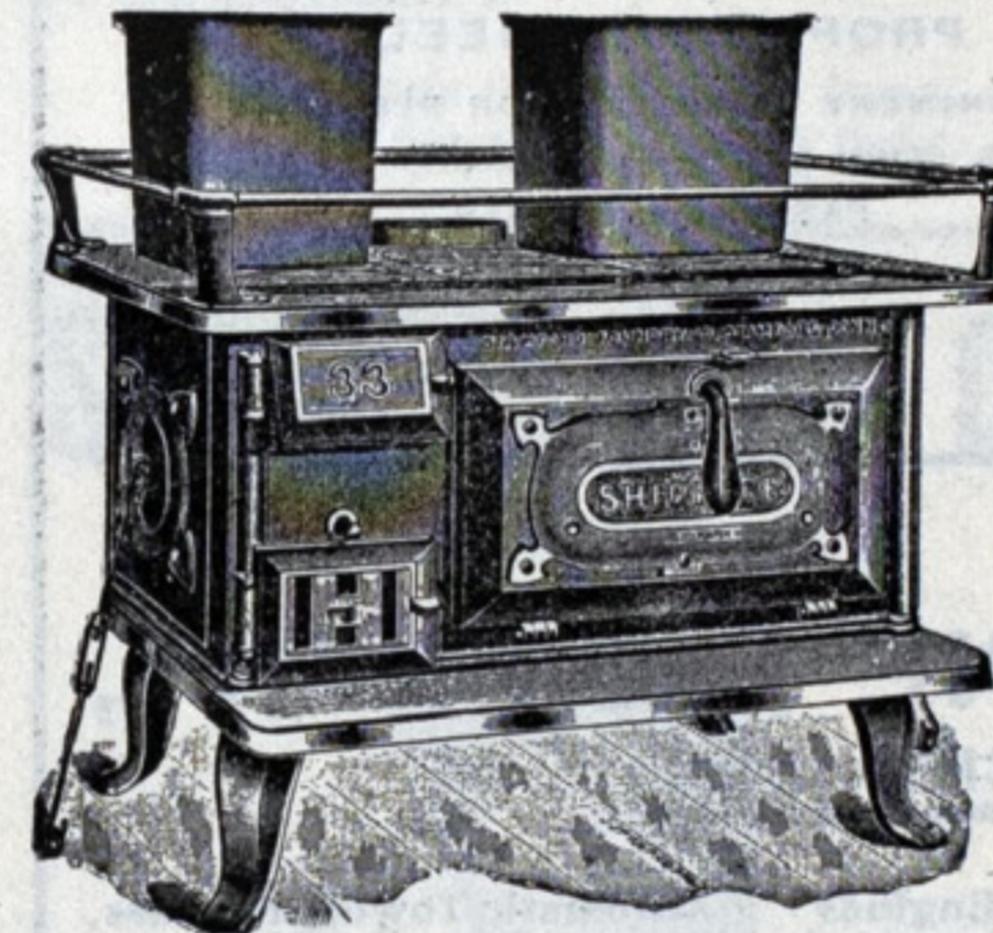
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